



Online Manual

Choose one of the following categories:

- **RADEON™/RADEON™ VE Getting Started...**
- **User's Guides**
- **Technical Specifications**
- **Compliance Information**



User's Guides

Click on your product:

- **RADEON™ VE**
- **ALL-IN-WONDER® RADEON™**
- **ALL-IN-WONDER® 128 PRO / ALL-IN-WONDER® 128**
- **ALL-IN-WONDER® PRO**
- **ATI MULTIMEDIA CENTER**
Some ATI Graphics cards will not support all of the features and functionality in the ATI Multimedia Center
- **ATI-TELETEXT MANUAL**
- **ATI-TV**
- **ATI-TV WONDER**
- **RADEON™ / RADEON™ VE Using Video In/Video Out**



Technical Information

Click on your product:

- ALL-IN-WONDER® RADEON™
- RADEON™ 32MB SDR
- XPERT 2000
- ALL-IN-WONDER® 128 PRO
- RADEON™ VE
- XPERT 128
- ALL-IN-WONDER® 128
- RAGE FURY MAXX
- XPERT 99
- ALL-IN-WONDER® PRO
- RAGE FURY PRO
- XPERT 98
- ALL-IN-WONDER®
- RAGE FURY
- XPERT LCD
- RADEON™ 32MB DDR
- RAGE MAGNUM
- XPERT@WORK
- RADEON™ 64MB DDR
- XPERT 2000 PRO
- XPERT@PLAY



RADEON™/RADEON™ VE Getting Started...

- **Safety Instructions for TV Tuner Products**
- **Installing Your RADEON™/RADEON™ VE**
- **Installing the ATI Driver for Windows® 98 SE, Windows® Me**
- **Installing the ATI Driver for Windows® 2000**
- **Multiple Display Support: Windows® 98 SE, Windows® Me**
- **Troubleshooting Tips**
- **Using the Online Manual**

Please read this guide before attempting to install your card.

Preparing Your Computer



Turn off the power to your system and discharge your body's static electric charge by touching a grounded surface—for example, the metal surface of the power supply—before performing any hardware procedure.

The manufacturer assumes no liability for any damage, caused directly or indirectly, by improper installation of any components by unauthorized service personnel. If you do not feel comfortable performing the installation, consult a qualified computer technician.

Damage to system components, the accelerator card, and injury to yourself may result if power is applied during installation.

NOTE: Before installing your RADEON™/RADEON™ VE we recommend that you first uninstall the driver for your current video card and reconfigure your operating system to use the standard display driver (VGA) supplied with your operating system. For more information about changing to the VGA driver, see your operating system documentation.

Safety Instructions for TV Tuner Products



IMPORTANT SAFETY INSTRUCTIONS

- **Read Instructions** - All the safety and operating instructions should be read before the product is operated.
- **Retain Instructions** - The safety and operating instructions should be retained for future reference.
- **Heed Warnings** - All warnings on the product and the operating instructions should be adhered to.
- **Compatibility** - This option card is for use only with IBM AT or compatible UL listed personal computers that have Installation Instructions detailing user installation of card cage accessories.
- **Grounding** - CAUTION: For continued protection against risk of electric shock and fire, this accessory should be installed only in products equipped with a three-wire grounding plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace the obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
- All option card securement pins shall be completely tightened, as to provide continuous bonding between the option card and the PC chassis.
- **Outdoor Antenna Grounding** - Since an outdoor antenna or cable system is connected to the product, be sure that the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to the antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection of grounding electrodes, and requirements for the grounding electrode.
- **Lightning** - For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet, and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.
- **Power Lines** - An outside antenna system should not be located in the vicinity of overhead power lines or other light or power circuits, or where it can fall into such power lines or circuits.
- When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them may be fatal.

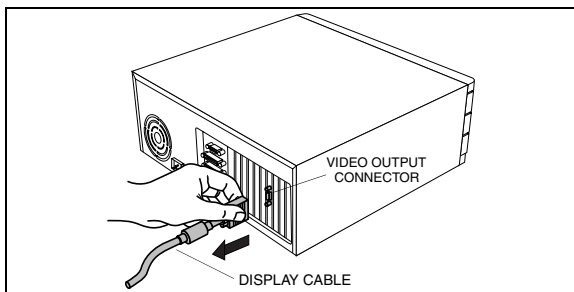
Note to CATV System Installer - This reminder is provided to call the CATV systems installer's attention to Section 820-40 of the NEC, which provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Installing Your RADEON™/RADEON™ VE

Now that you have prepared your computer, you are ready to install your RADEON™/RADEON™ VE graphics accelerator card.

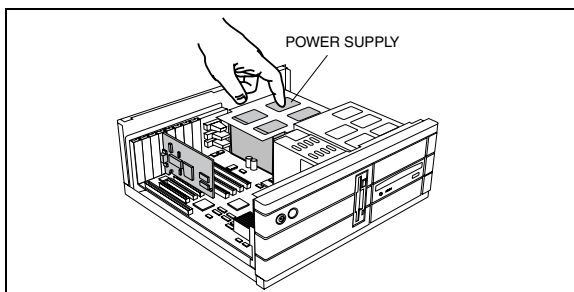
To install your graphics accelerator card

- 1** Power off the computer and monitor, then disconnect the display cable from the back of your computer.



- 2** Remove the computer cover. If necessary, consult your computer's manual for help in removing the cover.

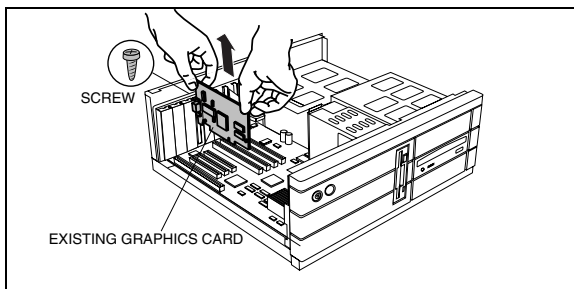
Remember to discharge your body's static electricity by touching the metal surface of the computer chassis.



- 3** Remove any existing graphics card from your computer.

If the old graphics card sticks, rock it gently from end to end.

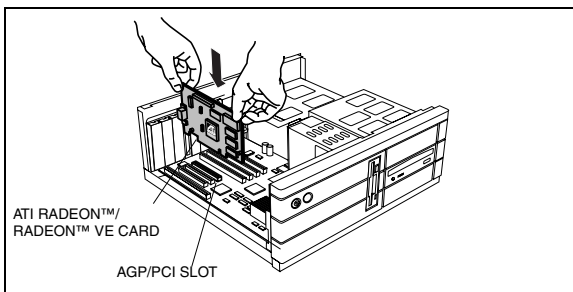
Remember to save the screw.



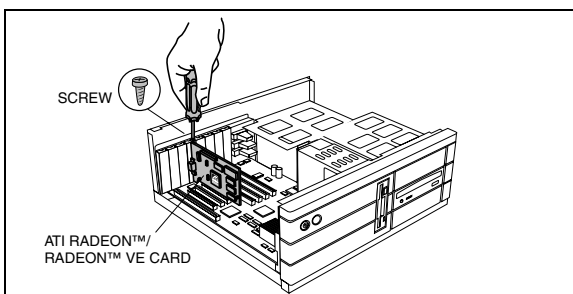
Or, if your computer has any **on-board graphics capability**, you may need to **disable it** on the motherboard. For more information, see your computer documentation.

- 4** Locate the AGP/PCI slot. If necessary, remove the metal cover from this slot; then **align your RADEON™/RADEON™ VE with the AGP/PCI slot, and press it in firmly until the card is fully seated.**

*Grasp the RADEON™/RADEON™ VE by the top edge and carefully seat it into the AGP/PCI slot. Ensure that the metal contacts are **completely** pushed into the slot.*

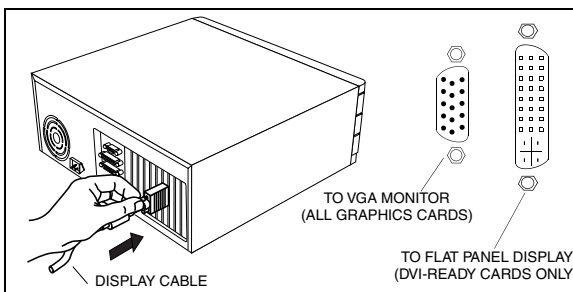


- 5** Replace the screw to fasten the card in place, and replace the computer cover.



- 6** Plug the display cable into your card; then turn on the computer and monitor. If your RADEON™/RADEON™ VE came with a DVI connector, you can connect a flat panel display to the appropriate connector, as shown below...

Make sure all cables are securely connected.



You are now ready to proceed with the installation of the ATI driver. For detailed instructions, select your operating system from the list below:

- [Windows® 98 SE / Windows® Me](#), see [Windows® “New Hardware Found”](#) on page 5.
- [Windows® 2000](#), see page 6.

Windows® “New Hardware Found”

New hardware will be detected after you restart your computer. To finish setting up your hardware click **Yes** when prompted to restart

To identify new hardware in Windows® 98 SE or Windows® Me

- 1 Windows® 98 SE or Windows® Me may launch the “Update Device Driver Wizard” to install the Standard VGA Driver. If it does, follow the step-by-step instructions below to allow Windows® to correctly identify your new hardware.

If the Wizard does not appear, proceed directly to [Installing the ATI Driver for Windows® 98 SE, Windows® Me on page 5](#).

- 2 Click **Next**.
- 3 Click **Finish**.
- 4 Insert your Windows® 98 SE or Windows® Me CD into your CD-ROM drive.
- 5 Click **OK**.
- 6 Type the following:
D:\WIN98 or D:\WINME
(If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter.)
- 7 Click **OK**.
- 8 Click **Yes** to restart your computer.

You are now ready to install the ATI driver. Proceed to [Installing the ATI Driver for Windows® 98 SE, Windows® Me on page 5](#), and follow the step-by-step instructions to complete the installation.

Installing the ATI Driver for Windows® 98 SE, Windows® Me

With Windows® 98 SE or Windows® Me running on your computer, you need to install the ATI driver to take advantage of the higher performance, resolutions, and special graphic features of the RADEON™/RADEON™ VE.

To ensure you install the latest driver, use the ATI Installation CD that shipped with your RADEON™/RADEON™ VE.

To install the ATI driver for Windows® 98 SE or Windows® Me

- 1 Insert the ATI INSTALLATION CD into your CD-ROM drive.
If Windows® runs the CD automatically, proceed to step 6.
- 2 Click **Start**.
- 3 Select **Run**.
- 4 Type the following:

D:\ATISSETUP

(If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter.)

- 5 Click **OK**.
- 6 Click on **ATI Easy Install** to begin the Installation Wizard.
- 7 Click **Next**.
- 8 Click **Yes** to the license agreement.
- 9 Follow the Wizard's on-screen instructions to complete the installation.

*The **Express** installation option is recommended. If your RADEON™/RADEON™ VE includes a multimedia component, the software for that component will automatically be installed, along with the ATI driver, by selecting this option.*

Installing the ATI Driver for Windows® 2000

With Windows® 2000 running on your computer, you need to install the ATI driver to take advantage of the higher performance, resolutions, and special graphic features of the RADEON™/RADEON™ VE.

To ensure you install the latest driver, use the ATI Installation CD that shipped with your RADEON™/RADEON™ VE.

To install the ATI driver for Windows® 2000

- 1 Insert the ATI INSTALLATION CD into your CD-ROM drive.
If Windows® runs the CD automatically, proceed to step 6.
- 2 Click **Start**.
- 3 Select **Run**.
- 4 Type the following:
D:\ATISSETUP
(If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter.)
- 5 Click **OK**.
- 6 Click on **ATI Easy Install** to begin the Installation Wizard.
- 7 Click **Next**.
- 8 Click **Yes** to the license agreement.
- 9 Follow the Wizard's on-screen instructions to complete the installation.

*The **Express** installation option is recommended. If your RADEON™/RADEON™ VE includes a multimedia component, the software for that component will automatically be installed, along with the ATI driver, by selecting this option.*

Multiple Display Support: Windows® 98 SE, Windows® Me

IMPORTANT: Please read the **Readme** file on the ATI Installation CD for the latest information regarding Multiple Display Support.

Troubleshooting Tips

The following troubleshooting tips may help if you experience problems. Contact your dealer or **ATI** for more advanced troubleshooting information.

- Check that the card is seated properly in the AGP/PCI slot.
- Ensure the display cable is securely fastened to the card's display connector.
- Make sure that the monitor and computer are plugged in and receiving power.
- If necessary, disable any built-in graphics capabilities on your motherboard. For more information, consult your computer's manual or manufacturer. (NOTE: Some manufacturers do not allow the built-in graphics to be disabled or to become the secondary display.)
- Make sure you selected the appropriate display device and graphics card when you installed the ATI driver.
- For more troubleshooting tips, right-click the ATI icon in the taskbar and select **Troubleshooting**.
- If you have problems during bootup, start your computer in **Safe Mode**. In Windows® 98 SE and Windows® Me, press and hold the CTRL key until the Microsoft® Windows® Startup Menu appears on the screen. Then select the number for **Safe Mode**, and press **Enter**. (You can also use F8 to bring up the Microsoft Windows® Startup Menu.) In **Safe Mode**, bring up the **Device Manager** and check for duplicate display adapter and monitor entries if you are only using one graphics card.
- For more assistance, use the **Troubleshooting Guide** located in the Windows® Help or contact your computer manufacturer.
- To contact **ATI Technical Assistance**, see your **Technical Support and Warranty Service** guide

Using the Online Manual

The RADEON™/RADEON™ VE comes with an online manual that describes its advanced features. The **Online Manual** provides reference, specification, disclaimer, legal, and compliance information that is not contained in this Getting Started guide.

To open the Online Manual

- 1 Insert the ATI INSTALLATION CD into your CD-ROM drive.

If Windows® runs the CD automatically, proceed to step 6.

- 2 Click **Start**.

- 3 Select **Run**.

- 4 Type the following:

D:\ATISSETUP

(If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter.)

- 5 Click **OK**.

- 6 Click **Online User Manual**.

ATI is a registered trademark of ATI Technologies Inc. in Canada, the United States and/or other countries. **RADEON** is a trademark of ATI Technologies Inc. in Canada, the United States, and/or other countries. **Windows** is a registered trademark of Microsoft Corporation in the United States and/or other countries. All other trademarks and/or registered trademarks are the properties of their respective owners.

RADEON™ VE

Technical Information

System Requirements

Pentium® 4/III/II, Celeron™, AMD® K6/Athlon or compatible system with AGP 2X or AGP 2X/4X universal slot.

CD-ROM drive required for software installation.

DVD drive required for DVD playback with a Pentium® II processor (or equivalent) and 32MB of system memory.

Operating System Windows® 2000 Windows® 98 SE Windows® Me

Specifications

Memory Configuration 64MB, 32MB and 16MB Double Data Rate non-upgradable.

Sync Signals Separate horizontal and vertical sync at TTL levels.

Video BIOS Compatible with VESA for Super VGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector. DVI-I (flat panel display) connector.

Display Support DDC1/2b/2b+ monitor support; VESA Display Power Management support. Register compatible with VGA.

TV/Video-out Connector S-Video. NTSC output.

Power +5V ±5% @ 0.4A typical.
+3.3V ±5% @ 1.4A typical.
+12V ±5% @ 0.3A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >300,000 hours.

EMC Certification FCC Class B.

Video Mode Table

RADEON VE Video Mode Table						
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits per pixel)		
				8	16	32
640x480	60	31.5	25.2	*	*	*
640x480	72	37.9	31.5	*	*	*
640x480	75	37.5	31.5	*	*	*
640x480	85	43.3	36.0	*	*	*
640x480	90	45.4	37.8	*	*	*
640x480	100	50.9	43.1	*	*	*
640x480	120	61.8	52.4	*	*	*
640x480	160	84.3	72.8	*	*	*
640x480	200	108.0	95.0	*	*	*
800x600	60	37.9	39.9	*	*	*
800x600	70	43.7	45.5	*	*	*
800x600	72	48.1	50.0	*	*	*
800x600	75	46.9	49.5	*	*	*
800x600	85	53.7	56.3	*	*	*
800x600	90	56.8	60.0	*	*	*
800x600	100	63.6	68.1	*	*	*
800x600	120	77.0	83.2	*	*	*
800x600	160	105.4	116.4	*	*	*
800x600	200	135.0	149.0	*	*	*
1024x768	70	56.5	75.0	*	*	*
1024x768	72	56.6	78.4	*	*	*
1024x768	75	60.0	78.8	*	*	*
1024x768	85	68.7	94.5	*	*	*



RADEON VE Video Mode Table						
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits per pixel)		
				8	16	32
1024x768	90	72.8	100.1	•	•	•
1024x768	100	81.4	113.3	•	•	•
1024x768	120	98.7	139.0	•	•	•
1024x768	140	116.6	164.2	•	•	•
1024x768	150	125.7	176.9	•	•	•
1024X768	160	134.8	192.0	•	•	•
1024x768	180	153.5	218.6	•	•	•
1024X768	200	172.8	246.1	•	•	•
1152x864	60	53.7	81.6	•	•	•
1152x864	70	63.0	96.7	•	•	•
1152x864	75	67.5	108.0	•	•	•
1152x864	80	72.4	112.3	•	•	•
1152x864	85	77.0	119.6	•	•	•
1152x864	100	91.5	143.4	•	•	•
1152x864	120	111.1	176.0	•	•	•
1152x864	150	141.4	226.3	•	•	•
1280x1024	60	64.0	108.0	•	•	•
1280x1024	70	74.6	128.9	•	•	•
1280x1024	74	79.0	138.5	•	•	•
1280x1024	75	80.0	135.0	•	•	•
1280x1024	85	91.1	157.5	•	•	•
1280x1024	90	97.0	169.2	•	•	•
1280x1024	100	108.5	190.9	•	•	•
1280X1024	120	131.6	233.7	•	•	•
1280X1024	125	137.6	244.4	•	•	•
1280X1024	130	143.5	254.9	•	•	•
1600x1200	52	64.2	137.7	•	•	•
1600x1200	58	71.9	155.4	•	•	•
1600x1200	60	75.0	162.0	•	•	•
1600x1200	66	82.2	178.9	•	•	•
1600x1200	72	90.0	195.9	•	•	•
1600x1200	75	93.8	202.5	•	•	•
1600x1200	76	95.2	208.7	•	•	•
1600x1200	85	106.3	229.5	•	•	•
1600x1200	90	113.8	251.2	•	•	•
1920x1440	60	90.0	234.0	•	•	•
1920x1440	75	112.5	297.0	•	•	•
2048x1536	75	120.2	340.4	•	•	•
Some display modes and color depths may not be available for all drivers. 2D & 3D resolutions & color depths are subject to change.						



RADEON VE DVI (Flat Panel Display) Modes	
Display Screen Resolution	Refresh Rate (Hz)
640x480	85
800x600	85
1024x768	85
1280x1024	75
DVI (Flat Panel) display cannot be used concurrently with TV-output display. DVI "hotplugging" is not supported.	



RAGE FURY MAXX

Technical Information

System Requirements

Pentium® 4/III/II, AMD® K6/Athlon, or compatible system with AGP 2X or AGP 2X/4X universal slot (2.0 compliant).

CD-ROM drive required for software installation.

DVD drive required for DVD playback (Windows® 98 only).

Operating System Windows® 98.

Specifications

Memory Configuration 64 MB non-upgradeable.

Sync Signals Separate horizontal and vertical sync at TTL levels.

Video BIOS AGP 2.0 compliant. Compatible with VESA for SVGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector.

Display Support DDC1/2b/2b+ monitor support; VESA Display Power Management support. Register compatible with VGA.

Video Interrupt IRQ 11 is requested, although the actual IRQ number is automatically assigned by the Plug & Play system BIOS.

Power +5V ±5% @ 0.6 A typical.
+3.3V ±5% @ 2.2 A typical.
+12V ±5% @ 0.5 A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >300,000 hours.

EMC Certification CISPR2:1998-Class B-Limits and methods of measurement of radio disturbance characteristics of Information Technology Equipment.

EN 50082-1:1997-Generic Immunity Standards- Residential, Commercial and Light Industry.

FCC PART 15, SUBPART B-UNINTENTIONAL RADIATORS, CLASS B COMPUTING DEVICES FOR HOME AND OFFICE USE.

Video Mode Table

RAGE FURY MAXX 64 MB *Video Mode Table											
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)							
				2D Display Modes				3D Display Modes			
				8	16	24	*32	8	16	24	*32
640x480	60	31.5	25.2	*	*	*	*	*	*	*	*
640x480	75	37.9	31.5	*	*	*	*	*	*	*	*
640x480	85	43.3	36.0	*	*	*	*	*	*	*	*
640x480	90	45.4	37.8	*	*	*	*	*	*	*	*
640x480	100	50.9	43.1	*	*	*	*	*	*	*	*
640x480	120	61.8	52.4	*	*	*	*	*	*	*	*
640x480	160	84.3	72.8	*	*	*	*	*	*	*	*
800x600	60	37.9	39.9	*	*	*	*	*	*	*	*
800x600	75	46.9	49.5	*	*	*	*	*	*	*	*
800x600	85	53.7	56.3	*	*	*	*	*	*	*	*
800x600	90	56.8	60.0	*	*	*	*	*	*	*	*
800x600	100	63.6	68.1	*	*	*	*	*	*	*	*
800x600	120	77.1	83.9	*	*	*	*	*	*	*	*
800x600	160	105.4	116.4	*	*	*	*	*	*	*	*
1024x768	60	48.4	65.0	*	*	*	*	*	*	*	*
1024x768	75	60.0	78.8	*	*	*	*	*	*	*	*
1024x768	85	68.7	94.5	*	*	*	*	*	*	*	*
1024x768	90	72.8	100.1	*	*	*	*	*	*	*	*



RAGE FURY MAXX 64 MB *Video Mode Table												
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)								
				2D Display Modes				3D Display Modes				
				8	16	24	*32	8	16	24	*32	
1024x768	100	81.4	113.3	*	*	*	*	*	*	*	*	
1024x768	120	98.7	139.0	*	*	*	*	*	*	*	*	
1024X768	160	134.8	192.0	*	*	*	*	*	*	*	*	
1152x864	60	53.7	81.6	*	*	*	*	*	*	*	*	
1152x864	75	67.5	108.0	*	*	*	*	*	*	*	*	
1152x864	85	77.0	119.6	*	*	*	*	*	*	*	*	
1152x864	100	91.5	143.4	*	*	*	*	*	*	*	*	
1152x864	120	111.1	176.0	*	*	*	*	*	*	*	*	
1280x1024	60	64.0	108.0	*	*	*	*	*	*	*	*	
1280x1024	75	80.0	135.0	*	*	*	*	*	*	*	*	
1280x1024	85	91.1	157.5	*	*	*	*	*	*	*	*	
1280x1024	100	108.5	190.9	*	*	*	*	*	*	*	*	
1280X1024	120	131.6	233.7	*	*	*	*	*	*	*	*	
1600x1200	60	75.0	162.0	*	*	*	*	*	*	*	*	
1600x1200	72	90.0	195.9	*	*	*	*	*	*	*	*	
1600x1200	75	93.8	202.5	*	*	*	*	*	*	*	*	
1600x1200	85	106.3	229.5	*	*	*	*	*	*	*	*	
1600x1200	90	113.8	251.2	*	*	*	*	*	*	*	*	
*32 - 24bpp color data is processed using a 32bpp data format. 2D and 3D resolutions and refresh rates are subject to change.												



RAGE FURY MAXX

ALL-IN-WONDER® PRO

ALL-IN-WONDER®

Technical Information

System Requirements

All-In-Wonder® Pentium® III/II/Pro, Celeron™ or compatible systems with 33MHz PCI local bus 2.1.

All-In-Wonder® Pro PCI Pentium® 4/III/II/Pro, Celeron™ or compatible systems with 33MHz PCI local bus 2.1.

All-In-Wonder® Pro AGP Pentium® 4/III/II, Celeron™, or compatible systems with AGP 2X bus (AGP 1.0 compliant).

CD-ROM drive required for software installation.

DVD drive required for DVD playback (All-In-Wonder Pro only).

Operating System Windows® 2000 (All-In-Wonder Pro only), Windows® 95, Windows® 98. Graphics features only are supported under DOS® 5.0 or higher, Windows® 3.1x, Windows® NT 3.51, 4.0, OS/2 2.1® and OS/2 Warp®.

Specifications

Memory Configurations All-In-Wonder: 2 MB non-upgradeable; 2MB upgradeable to 4 MB; 4MB non-upgradeable. All-In-Wonder Pro: 4MB upgradeable to 8MB; 8MB non-upgradeable.

Sync Signals Separate horizontal and vertical sync at TTL levels.

TV Output Connectors Composite and S-Video. NTSC output (PAL versions available).

Video BIOS PCI 2.1 compliant. AGP 1.0 compliant. Compatible with VESA for SVGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector.

AMC Connector 2x20 pin header. Shares the same footprint with the 2x13 pin VGA Feature Connector, VGA Out only, VESA standard.

Power +5V ±5%, @ 1.3A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF 120,000 hours.

Video Mode Table

ALL-IN-WONDER and ALL-IN-WONDER PRO Video Mode Table																
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)												
				2 MB				4 MB				6 MB or 8 MB				
				8	16	24	*32	8	16	24	*32	8	16	24	*32	
640x480	60	31.5	25.1	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	72	37.4	32.0	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	75	37.5	31.5	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	85	43.3	36.0	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	90	48.0	39.9	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	100	52.9	44.9	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	120	63.7	55.0	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	160	84.1	70.0	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	200	100.2	81.0	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	48	33.8	36.0	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	56	35.2	36.0	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	60	37.8	39.9	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	70	44.5	44.9	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	72	48.0	50.0	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	75	46.9	49.5	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	85	53.7	56.2	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	90	57.1	56.6	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	100	62.5	67.5	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	120	76.0	81.0	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	160	99.6	106.0	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	200	125.9	135.0	*	*	*	*	*	*	*	*	*	*	*	*	*
1024x768	43	35.5	44.9	*	*	*	*	*	*	*	*	*	*	*	*	*
1024x768	60	48.4	65.0	*	*	*	*	*	*	*	*	*	*	*	*	*
1024x768	70	56.5	75.0	*	*	*	*	*	*	*	*	*	*	*	*	*
1024x768	72	58.2	75.0	*	*	*	*	*	*	*	*	*	*	*	*	*
1024x768	75	60.0	78.8	*	*	*	*	*	*	*	*	*	*	*	*	*
1024x768	85	68.7	94.5	*	*	*	*	*	*	*	*	*	*	*	*	*



ALL-IN-WONDER and ALL-IN-WONDER PRO Video Mode Table															
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)											
				2 MB				4 MB				6 MB or 8 MB			
				8	16	24	*32	8	16	24	*32	8	16	24	*32
1024x768	90	76.2	100.0	*	*	*	*	*	*	*	*	*	*	*	*
1024x768	100	79.0	110.0	*	*	*	*	*	*	*	*	*	*	*	*
1024x768	120	96.7	130.0	*	*	*	*	*	*	*	*	*	*	*	*
1024x768	140	113.3	157.5	*	*			*	*	*	*	*	*	*	*
1024x768	150	120.6	160.0	*	*			*	*	*	*	*	*	*	*
1152x864	43	45.9	65.0	*	*	*	*	*	*	*	*	*	*	*	*
1152x864	47	44.9	65.0	*	*	*	*	*	*	*	*	*	*	*	*
1152x864	60	54.9	80.0	*	*	*	*	*	*	*	*	*	*	*	*
1152x864	70	66.1	100.0	*	*	*	*	*	*	*	*	*	*	*	*
1152x864	75	75.1	110.0	*	*	*	*	*	*	*	*	*	*	*	*
1152x864	80	76.4	110.0	*	*	*	*	*	*	*	*	*	*	*	*
1152x864	85	77.1	121.5	*	*	*		*	*	*	*	*	*	*	*
1152x864	100	90.2	135.0	*	*			*	*	*	*	*	*	*	*
1152x864	120	108.7	172.0	*	*			*	*	*		*	*	*	
1280x1024	43	50.0	80.0	*	*	*		*	*	*		*	*	*	*
1280x1024	47	50.0	80.0	*	*	*		*	*	*		*	*	*	*
1280x1024	60	64.0	110.0	*	*	*		*	*	*		*	*	*	*
1280x1024	70	74.6	126.0	*	*	*		*	*	*		*	*	*	*
1280x1024	74	77.9	135.0	*	*	*		*	*	*		*	*	*	*
1280x1024	75	80.0	135.0	*	*	*		*	*	*		*	*	*	*
1280x1024	85	91.2	157.5	*	*			*	*	*		*	*	*	*
1280x1024	90	96.2	160.0	*	*			*	*	*		*	*	*	*
1280x1024	100	106.4	172.0	*	*			*	*	*		*	*	*	*
1600x1200	52	68.0	135.0	*				*	*			*	*	*	*
1600x1200	58	75.0	135.0	*				*	*			*	*	*	*
1600x1200	60	76.2	156.0	*				*	*			*	*	*	*
1600x1200	72	89.7	194.4	*				*	*			*	*	*	*
1600x1200	75	93.8	202.0	*				*	*			*	*	*	*
1600x1200	85	106.2	229.5	*				*	*			*	*		
*32 - 24bpp color data is processed using a 32bpp data format. 2D and 3D resolutions and refresh rates are subject to change.															



ALL-IN-WONDER® 128 PRO

Technical Information

System Requirements

Pentium® 4/III/II, Celeron™, AMD® K6/Athlon or compatible system with AGP 2X or AGP 4X/2X slot.

AGP 2.0 compliant.

CD-ROM drive required for software installation.

DVD drive required for DVD playback (Windows® NT 4.0 not supported).

Operating System Windows® 2000, Windows® 98, Windows® 95b. Windows® NT 4.0. (Graphics only. No multimedia features available).

Specifications

Memory Configuration 32 MB non-upgradeable.

Sync Signals Separate horizontal and vertical sync at TTL levels.

TV Output Connectors Composite and S-Video. NTSC output (PAL versions available).

Video BIOS AGP 2.0 compliant. Compatible with VESA for SVGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector.

Display Support DDC1/2b/2b+ monitor support; VESA Display Power Management support. Register compatible with VGA.

Video Interrupt IRQ 11 is requested, although the actual IRQ number is automatically assigned by the Plug & Play system BIOS.

Power +5V ±5% @ 0.4 A typical.
+3.3V ±5% @ 2.0 A typical.
+12V ±5% @ 0.1 A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >300,000 hours.

EMC Certification FCC Class B.

Video Mode Table

ALL-IN-WONDER 128 PRO Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
640x480	60	31.5	25.2	•	•	•	•
640x480	72	37.9	31.5	•	•	•	•
640x480	75	37.5	31.5	•	•	•	•
640x480	85	43.3	36.0	•	•	•	•
640x480	90	48.0	37.8	•	•	•	•
640x480	100	50.9	43.1	•	•	•	•
640x480	120	61.8	52.4	•	•	•	•
640x480	160	84.3	72.8	•	•	•	•
640x480	200	108.0	95.0	•	•	•	•
800x600	48	26.4	29.3	•	•	•	•
800x600	56	35.1	36.0	•	•	•	•
800x600	60	37.9	39.9	•	•	•	•
800x600	70	43.7	45.5	•	•	•	•
800x600	72	48.1	50.0	•	•	•	•
800x600	75	46.9	49.5	•	•	•	•
800x600	85	53.7	56.3	•	•	•	•
800x600	90	56.8	60.0	•	•	•	•
800x600	100	63.6	68.1	•	•	•	•
800x600	120	77.1	83.9	•	•	•	•
800x600	160	105.4	116.4	•	•	•	•
800x600	180	120.0	132.5	•	•	•	•
800x600	200	135.0	149.0	•	•	•	•
1024x768	43	35.5	44.9	•	•	•	•
1024x768	60	48.4	65.0	•	•	•	•
1024x768	70	56.5	75.0	•	•	•	•



ALL-IN-WONDER 128 PRO Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
1024x768	72	57.6	78.4	•	•	•	•
1024x768	75	60.0	78.8	•	•	•	•
1024x768	85	68.7	94.5	•	•	•	•
1024x768	90	72.8	100.1	•	•	•	•
1024x768	100	81.4	113.3	•	•	•	•
1024x768	120	98.7	139.0	•	•	•	•
1024x768	140	116.6	164.2	•	•	•	•
1024x768	150	125.7	176.9	•	•	•	•
1024x768	160	134.8	192.0	•	•	•	•
1024x768	180	153.5	218.6	•	•	•	•
1152x864	43	38.0	56.0	•	•	•	•
1152x864	47	41.7	62.1	•	•	•	•
1152x864	60	53.7	81.6	•	•	•	•
1152x864	70	63.0	96.7	•	•	•	•
1152x864	75	67.5	108.0	•	•	•	•
1152x864	80	72.4	112.3	•	•	•	•
1152x864	85	77.0	119.6	•	•	•	•
1152x864	100	91.5	143.4	•	•	•	•
1152x864	120	111.1	176.0	•	•	•	•
1152x864	150	141.4	226.3	•	•	•	•
1152x864	160	151.6	242.6	•	•	•	•
1280x1024	43	45.1	75.1	•	•	•	•
1280x1024	47	49.4	83.0	•	•	•	•
1280x1024	60	64.0	108.0	•	•	•	•
1280x1024	70	74.6	128.9	•	•	•	•
1280x1024	74	79.0	138.5	•	•	•	•
1280x1024	75	80.0	135.0	•	•	•	•
1280x1024	85	91.1	157.5	•	•	•	•
1280x1024	90	97.0	169.2	•	•	•	•
1280x1024	100	108.5	190.9	•	•	•	•
1280x1024	120	131.6	233.7	•	•	•	•
1280x1024	125	137.6	244.4	•	•	•	•
1600x1200	52	64.2	137.7	•	•	•	•
1600x1200	58	71.9	155.4	•	•	•	•
1600x1200	60	75.0	162.0	•	•	•	•
1600x1200	66	82.2	178.9	•	•	•	•
1600x1200	72	90.0	195.9	•	•	•	•
1600x1200	75	93.8	202.5	•	•	•	•
1600x1200	76	95.2	208.7	•	•	•	•
1600x1200	85	106.3	229.5	•	•	•	•
1800x1440	60	89.4	219.5	•	•	•	•



ALL-IN-WONDER 128 PRO Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
1800x1440	65	97.1	238.5	•	•	•	•
1800x1440	70	104.9	249.9	•	•	•	•
1920x1080	60	67.0	172.7	•	•	•	•
1920x1080	70	78.6	205.1	•	•	•	•
1920x1080	75	84.6	220.6	•	•	•	•
1920x1080	80	90.4	237.4	•	•	•	•
1920x1200	60	74.5	193.1	•	•	•	•
1920x1200	72	90.0	222.2	•	•	•	•
1920x1200	75	93.9	231.4	•	•	•	•
1920x1200	76	95.2	245.0	•	•	•	•
1920x1440	60	89.4	234.5	•	•	•	•
*32 - 24bpp color data is processed using a 32bpp data format. 2D and 3D resolutions and refresh rates are subject to change.							



ALL-IN-WONDER® 128

Technical Information

System Requirements

PCI Version Pentium® 4/III/II or compatible with 33MHz PCI local bus 2.1

AGP Version Pentium® 4/III/II or compatible with AGP 2X bus (AGP 2.0 compliant)

CD-ROM drive required for software installation.

DVD drive required for DVD playback (Windows® NT 4.0 not supported).

Operating System Windows® 2000, Windows® 98, Windows® 95b. Windows® NT 4.0. (Graphics only. No multimedia features available).

Specifications

Memory Configurations 16 MB or 32 MB non-upgradeable.

Sync Signals Separate horizontal and vertical sync at TTL levels.

TV Output Connectors Composite and S-Video. NTSC output (PAL versions available).

Video BIOS PCI 2.1 compliant. AGP 2.0 compliant. Compatible with VESA for SVGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector.

Display Support DDC1/2b/2b+ monitor support; VESA Display Power Management support. Register compatible with VGA.

Video Interrupt IRQ 11 is requested, although the actual IRQ number is automatically assigned by the Plug & Play system BIOS.

Power +5V $\pm 5\%$ @0.4A typical.
+3.3V $\pm 5\%$ @1.4A typical.
+12V $\pm 5\%$ @0.3A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >250,000 hours.

EMC Certification FCC Class B.

Video Mode Table

ALL-IN-WONDER 128 Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
640x480	60	31.5	25.2	•	•	•	•
640x480	72	37.9	31.5	•	•	•	•
640x480	75	37.5	31.5	•	•	•	•
640x480	85	43.3	36.0	•	•	•	•
640x480	90	48.0	37.8	•	•	•	•
640x480	100	50.9	43.1	•	•	•	•
640x480	120	61.8	52.4	•	•	•	•
640x480	160	84.3	72.8	•	•	•	•
640x480	200	108.0	95.0	•	•	•	•
800x600	48	26.4	29.3	•	•	•	•
800x600	56	35.1	36.0	•	•	•	•
800x600	60	37.9	39.9	•	•	•	•
800x600	70	43.7	45.5	•	•	•	•
800x600	72	48.1	50.0	•	•	•	•
800x600	75	46.9	49.5	•	•	•	•
800x600	85	53.7	56.3	•	•	•	•
800x600	90	56.8	60.0	•	•	•	•
800x600	100	63.6	68.1	•	•	•	•
800x600	120	77.1	83.9	•	•	•	•
800x600	160	105.4	116.4	•	•	•	•
800x600	180	120.0	132.5	•	•	•	•
800x600	200	135.0	149.0	•	•	•	•
1024x768	43	35.5	44.9	•	•	•	•
1024x768	60	48.4	65.0	•	•	•	•



ALL-IN-WONDER 128 Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
1024x768	70	56.5	75.0	•	•	•	•
1024x768	72	57.6	78.4	•	•	•	•
1024x768	75	60.0	78.8	•	•	•	•
1024x768	85	68.7	94.5	•	•	•	•
1024x768	90	72.8	100.1	•	•	•	•
1024x768	100	81.4	113.3	•	•	•	•
1024x768	120	98.7	139.0	•	•	•	•
1024x768	140	116.6	164.2	•	•	•	•
1024x768	150	125.7	176.9	•	•	•	•
1024x768	160	134.8	192.0	•	•	•	•
1024x768	180	153.5	218.6	•	•	•	•
1152x864	43	38.0	56.0	•	•	•	•
1152x864	47	41.7	62.1	•	•	•	•
1152x864	60	53.7	81.6	•	•	•	•
1152x864	70	63.0	96.7	•	•	•	•
1152x864	75	67.5	108.0	•	•	•	•
1152x864	80	72.4	112.3	•	•	•	•
1152x864	85	77.0	119.6	•	•	•	•
1152x864	100	91.5	143.4	•	•	•	•
1152x864	120	111.1	176.0	•	•	•	•
1152x864	150	141.4	226.3	•	•	•	•
1152x864	160	151.6	242.6	•	•	•	•
1280x1024	43	45.1	75.1	•	•	•	•
1280x1024	47	49.4	83.0	•	•	•	•
1280x1024	60	64.0	108.0	•	•	•	•
1280x1024	70	74.6	128.9	•	•	•	•
1280x1024	74	79.0	138.5	•	•	•	•
1280x1024	75	80.0	135.0	•	•	•	•
1280x1024	85	91.1	157.5	•	•	•	•
1280x1024	90	97.0	169.2	•	•	•	•
1280x1024	100	108.5	190.9	•	•	•	•
1280x1024	120	131.6	233.7	•	•	•	•
1280x1024	125	137.6	244.4	•	•	•	•
1600x1200	52	64.2	137.7	•	•	•	•
1600x1200	58	71.9	155.4	•	•	•	•
1600x1200	60	75.0	162.0	•	•	•	•
1600x1200	66	82.2	178.9	•	•	•	•
1600x1200	72	90.0	195.9	•	•	•	•
1600x1200	75	93.8	202.5	•	•	•	•
1600x1200	76	95.2	208.7	•	•	•	•
1600x1200	85	106.3	229.5	•	•	•	•



ALL-IN-WONDER 128 Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
1800x1440	60	89.4	219.5	•	•	•	•
1800x1440	65	97.1	238.5	•	•	•	•
1800x1440	70	104.9	249.9	•	•	•	•
1920x1080	60	67.0	172.7	•	•	•	•
1920x1080	70	78.6	205.1	•	•	•	•
1920x1080	75	84.6	220.6	•	•	•	•
1920x1080	80	90.4	237.4	•	•	•	•
1920x1200	60	74.5	193.1	•	•	•	•
1920x1200	72	90.0	222.2	•	•	•	•
1920x1200	75	93.9	231.4	•	•	•	•
1920x1200	76	95.2	245.0	•	•	•	•
1920x1440	60	89.4	234.5	•	•	•	•
*32 - 24bpp color data is processed using a 32bpp data format. 2D and 3D resolutions and refresh rates are subject to change.							



RAGE FURY

Technical Information

System Requirements

Pentium® 4/III/II, Celeron™, AMD® K6/Athlon or compatible system with AGP 2X or AGP 4X/2X slot.

AGP 2.0 compliant.

CD-ROM drive required for software installation.

DVD drive required for DVD playback (Windows® NT 4.0 not supported).

Operating System Windows® 2000, Windows® 98, Windows® 95b. Windows® NT 4.0 (DVD playback not supported).

Specifications

Memory Configurations 16 MB without TV output, 32 MB without TV output, 32 MB with TV output.

Sync Signals Separate horizontal and vertical sync at TTL levels.

TV Output Connectors Composite and S-Video. NTSC output (PAL versions available).

Video BIOS AGP 2.0 compliant. Compatible with VESA for SVGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector.

Display Support DDC1/2b/2b+ monitor support; VESA Display Power Management support. Register compatible with VGA.

Video Interrupt IRQ 11 is requested, although the actual IRQ number is automatically assigned by the Plug & Play system BIOS.

AMC Feature Connector 32 MB (TV): 2x20 pin header, VGA Out only, VESA standard.



VIP Feature Connector 16 MB/32 MB: 26-pin dual row header (male), VESA standard.

Power +5V $\pm 5\%$ @ 0.4 A typical.
+3.3V $\pm 5\%$ @ 1.4 A typical.
+12V $\pm 5\%$ @ 0.3 A typical.

Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >300,000 hours.

EMC Certification FCC Class B.

Video Mode Table

RAGE FURY Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
*32 - 24bpp color data is processed using a 32bpp data format.							
640x480	60	31.5	25.2	•	•	•	•
640x480	72	37.9	31.5	•	•	•	•
640x480	75	37.5	31.5	•	•	•	•
640x480	85	43.3	36.0	•	•	•	•
640x480	90	48.0	37.8	•	•	•	•
640x480	100	50.9	43.1	•	•	•	•
640x480	120	61.8	52.4	•	•	•	•
640x480	160	84.3	72.8	•	•	•	•
640x480	200	108.0	95.0	•	•	•	•
800x600	48	26.4	29.3	•	•	•	•
800x600	56	35.1	36.0	•	•	•	•
800x600	60	37.9	39.9	•	•	•	•
800x600	70	43.7	45.5	•	•	•	•
800x600	72	48.1	50.0	•	•	•	•
800x600	75	46.9	49.5	•	•	•	•
800x600	85	53.7	56.3	•	•	•	•
800x600	90	56.8	60.0	•	•	•	•



RAGE FURY Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
800x600	100	63.6	68.1	•	•	•	•
800x600	120	77.1	83.9	•	•	•	•
800x600	160	105.4	116.4	•	•	•	•
800x600	180	120.0	132.5	•	•	•	•
800x600	200	135.0	149.0	•	•	•	•
1024x768	43	35.5	44.9	•	•	•	•
1024x768	60	48.4	65.0	•	•	•	•
1024x768	70	56.5	75.0	•	•	•	•
1024x768	72	57.6	78.4	•	•	•	•
1024x768	75	60.0	78.8	•	•	•	•
1024x768	85	68.7	94.5	•	•	•	•
1024x768	90	72.8	100.1	•	•	•	•
1024x768	100	81.4	113.3	•	•	•	•
1024x768	120	98.7	139.0	•	•	•	•
1024x768	140	116.6	164.2	•	•	•	•
1024x768	150	125.7	176.9	•	•	•	•
1024x768	160	134.8	192.0	•	•	•	•
1024x768	180	153.5	218.6	•	•	•	•
1152x864	43	38.0	56.0	•	•	•	•
1152x864	47	41.7	62.1	•	•	•	•
1152x864	60	53.7	81.6	•	•	•	•
1152x864	70	63.0	96.7	•	•	•	•
1152x864	75	67.5	108.0	•	•	•	•
1152x864	80	72.4	112.3	•	•	•	•
1152x864	85	77.0	119.6	•	•	•	•
1152x864	100	91.5	143.4	•	•	•	•
1152x864	120	111.1	176.0	•	•	•	•
1152x864	150	141.4	226.3	•	•	•	•
1152x864	160	151.6	242.6	•	•	•	•
1280x1024	43	45.1	75.1	•	•	•	•
1280x1024	47	49.4	83.0	•	•	•	•
1280x1024	60	64.0	108.0	•	•	•	•
1280x1024	70	74.6	128.9	•	•	•	•
1280x1024	74	79.0	138.5	•	•	•	•
1280x1024	75	80.0	135.0	•	•	•	•
1280x1024	85	91.1	157.5	•	•	•	•
1280x1024	90	97.0	169.2	•	•	•	•
1280x1024	100	108.5	190.9	•	•	•	•
1280x1024	120	131.6	233.7	•	•	•	•
1280x1024	125	137.6	244.4	•	•	•	•
1600x1200	52	64.2	137.7	•	•	•	•



RAGE FURY

RAGE FURY Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
1600x1200	58	71.9	155.4	•	•	•	•
1600x1200	60	75.0	162.0	•	•	•	•
1600x1200	66	82.2	178.9	•	•	•	•
1600x1200	72	90.0	195.9	•	•	•	•
1600x1200	75	93.8	202.5	•	•	•	•
1600x1200	76	95.2	208.7	•	•	•	•
1600x1200	85	106.3	229.5	•	•	•	•
1800x1440	60	89.4	219.5	•	•	•	•
1800x1440	65	97.1	238.5	•	•	•	•
1800x1440	70	104.9	249.9	•	•	•	•
1920x1080	60	67.0	172.7	•	•	•	•
1920x1080	70	78.6	205.1	•	•	•	•
1920x1080	75	84.6	220.6	•	•	•	•
1920x1080	80	90.4	237.4	•	•	•	•
1920x1200	60	74.5	193.1	•	•	•	•
1920x1200	72	90.0	222.2	•	•	•	•
1920x1200	75	93.9	231.4	•	•	•	•
1920x1200	76	95.2	245.0	•	•	•	•
1920x1440	60	89.4	234.5	•	•	•	•
*32-24bpp color data is processed using a 32bpp data format. 2D and 3D resolutions are refresh rates are subject to change.							



RAGE FURY

RAGE FURY PRO

Technical Information

System Requirements

Pentium® 4/III/II, Celeron™, AMD® K6/Athlon or compatible system with AGP 2X or AGP 4X/2X slot.

AGP 2.0 compliant.

CD-ROM drive required for software installation.

DVD drive required for DVD playback (Windows® NT 4.0 not supported).

Operating System Windows® 2000, Windows® 98, Windows® 95b. Windows® NT 4.0 (DVD and video input/output not supported).

Specifications

Memory Configurations 32 MB with Video-in/Video-out. 32 MB with DVI connector. 16MB with DVI (OEM only).

Sync Signals Separate horizontal and vertical sync at TTL levels.

TV/Video-out Connectors Composite and S-Video. NTSC output (PAL versions available).

Video-in Connector Composite.

Video BIOS AGP 2.0 compliant. Compatible with VESA for SVGA.

Monitor Support CRT monitor: 15-pin D shell (female), IBM standard VGA connector. DFP monitor: Standard DVI-D connector. Display support up to UXGA resolution 1600x1200 (DVI versions only).

Display Support DDC1/2b/2b+ monitor support. VESA Display Power Management support. Register compatible with VGA.

Video Interrupt IRQ 11 is requested, although the actual IRQ number is automatically assigned by the Plug & Play system BIOS.

Power +5V ±5% @ 0.4 A typical.
+3.3V ±5% @ 2.0 A typical.
+12V ±5% @ 0.1 A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >300,000 hours.

EMC Certification FCC Class B.

Video Mode Table

RAGE FURY PRO Video Mode Table											
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)							
				16 MB				32 MB			
				8	16	24	*32	8	16	24	*32
640x480	60	31.5	25.2	*	*	*	*	*	*	*	*
640x480	72	37.9	31.5	*	*	*	*	*	*	*	*
640x480	75	37.5	31.5	*	*	*	*	*	*	*	*
640x480	85	43.3	36.0	*	*	*	*	*	*	*	*
640x480	90	45.4	37.8	*	*	*	*	*	*	*	*
640x480	100	50.9	43.1	*	*	*	*	*	*	*	*
640x480	120	61.8	52.4	*	*	*	*	*	*	*	*
640x480	160	84.3	72.8	*	*	*	*	*	*	*	*
640x480	200	108.0	95.0	*	*	*	*	*	*	*	*
800x600	48	26.4	29.3	*	*	*	*	*	*	*	*
800x600	56	35.1	36.0	*	*	*	*	*	*	*	*
800x600	60	37.9	39.9	*	*	*	*	*	*	*	*
800x600	70	43.7	45.5	*	*	*	*	*	*	*	*
800x600	72	48.1	50.0	*	*	*	*	*	*	*	*
800x600	75	46.9	49.5	*	*	*	*	*	*	*	*
800x600	85	53.7	56.3	*	*	*	*	*	*	*	*
800x600	90	56.8	60.0	*	*	*	*	*	*	*	*
800x600	100	63.6	68.1	*	*	*	*	*	*	*	*
800x600	120	77.0	83.2	*	*	*	*	*	*	*	*
800x600	160	105.4	116.4	*	*	*	*	*	*	*	*
800x600	200	135.0	149.0	*	*	*	*	*	*	*	*
1024x768	43	35.5	44.9	*	*	*	*	*	*	*	*
1024x768	60	48.4	65.0	*	*	*	*	*	*	*	*
1024x768	70	56.5	75.0	*	*	*	*	*	*	*	*
1024x768	72	56.6	78.4	*	*	*	*	*	*	*	*



RAGE FURY PRO Video Mode Table												
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)								
				16 MB				32 MB				
				8	16	24	*32	8	16	24	*32	
1024x768	75	60.0	78.8	*	*	*	*	*	*	*	*	
1024x768	85	68.7	94.5	*	*	*	*	*	*	*	*	
1024x768	90	72.8	100.1	*	*	*	*	*	*	*	*	
1024x768	100	81.4	113.3	*	*	*	*	*	*	*	*	
1024x768	120	98.7	139.0	*	*	*	*	*	*	*	*	
1024x768	140	116.6	164.2	*	*	*	*	*	*	*	*	
1024x768	150	125.7	176.9	*	*	*	*	*	*	*	*	
1024X768	160	134.8	192.0	*	*	*	*	*	*	*	*	
1024x768	180	153.5	218.6	*	*	*	*	*	*	*	*	
1024X768	200	172.8	246.1	*	*	*	*	*	*	*	*	
1152x864	43	38.0	56.0	*	*	*	*	*	*	*	*	
1152x864	47	41.7	62.1	*	*	*	*	*	*	*	*	
1152x864	60	53.7	81.6	*	*	*	*	*	*	*	*	
1152x864	70	63.0	96.7	*	*	*	*	*	*	*	*	
1152x864	75	67.5	108.0	*	*	*	*	*	*	*	*	
1152x864	80	72.4	112.3	*	*	*	*	*	*	*	*	
1152x864	85	77.0	119.6	*	*	*	*	*	*	*	*	
1152x864	100	91.5	143.4	*	*	*	*	*	*	*	*	
1152x864	120	111.1	176.0	*	*	*	*	*	*	*	*	
1152x864	150	141.4	226.3	*	*	*	*	*	*	*	*	
1152x864	160	151.6	242.6	*	*	*	*	*	*	*	*	
1280x1024	43	45.1	75.1	*	*	*	*	*	*	*	*	
1280x1024	47	49.4	83.0	*	*	*	*	*	*	*	*	
1280x1024	60	64.0	108.0	*	*	*	*	*	*	*	*	
1280x1024	70	74.6	128.9	*	*	*	*	*	*	*	*	
1280x1024	74	79.0	138.5	*	*	*	*	*	*	*	*	
1280x1024	75	80.0	135.0	*	*	*	*	*	*	*	*	
1280x1024	85	91.1	157.5	*	*	*	*	*	*	*	*	
1280x1024	90	97.0	169.2	*	*	*	*	*	*	*	*	
1280x1024	100	108.5	190.9	*	*	*	*	*	*	*	*	
1280X1024	120	131.6	233.7	*	*	*	*	*	*	*	*	
1280X1024	125	137.6	244.4	*	*	*	*	*	*	*	*	
1280X1024	130	143.5	254.9	*	*	*	*	*	*	*	*	
1600x1200	52	64.2	137.7	*	*	*	*	*	*	*	*	
1600x1200	58	71.9	155.4	*	*	*	*	*	*	*	*	
1600x1200	60	75.0	162.0	*	*	*	*	*	*	*	*	
1600x1200	66	82.2	178.9	*	*	*	*	*	*	*	*	
1600x1200	72	90.0	195.9	*	*	*	*	*	*	*	*	
1600x1200	75	93.8	202.5	*	*	*	*	*	*	*	*	
1600x1200	76	95.2	208.7	*	*	*	*	*	*	*	*	
1600x1200	85	106.3	229.5	*	*	*	*	*	*	*	*	
1600x1200	90	113.8	251.2	*	*	*	*	*	*	*	*	



RAGE FURY PRO

RAGE FURY PRO Video Mode Table											
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)							
				16 MB				32 MB			
				8	16	24	*32	8	16	24	*32
1920X1200	60	74.5	193.1					*	*	*	*
1920X1200	72	90.0	222.2					*	*	*	*
1920X1200	75	93.9	231.4					*	*	*	*
1920X1200	76	95.2	245.0					*	*	*	*
1920X1200	80	100.5	263.7					*	*	*	*
1920X1200	85	107.1	282.7					*	*	*	*
1920X1440	60	89.4	234.5					*	*		
1920X1440	75	112.7	297.6					*	*		
*32 - 24bpp color data is processed using a 32bpp data format. 2D and 3D resolutions and refresh rates are subject to change.											



RAGE FURY PRO

RAGE MAGNUM

Technical Information

System Requirements

Pentium® 4/III/II, Celeron™, AMD® K6/Athlon or compatible system with AGP 2X slot.

AGP 1.0 compliant.

CD-ROM drive required for software installation.

DVD drive required for DVD playback (Windows® NT 4.0 not supported).

Operating System Windows® 2000, Windows® 98, Windows® 95b. Windows® NT 4.0 (DVD playback not supported).

Specifications

Memory Configuration 32 MB, non-upgradable.

Sync Signals Separate horizontal and vertical sync at TTL levels.

TV Out Not available with this product.

Video BIOS AGP 1.0 compliant. Compatible with VESA for SVGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector.

Display Support DDC1/2b/2b+ monitor support; VESA Display Power Management support. Register compatible with VGA.

Video Interrupt IRQ 11 is requested, although the actual IRQ number is automatically assigned by the Plug & Play system BIOS.

VIP Feature Connector 26-pin dual row header (male), VESA standard.

Power +5V ±5% @ 0.4 A typical.
+3.3V ±5% @ 1.4 A typical.
+12V ±5% @ 0.3 A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >300,000 hours.

EMC Certification FCC Class B.

Video Mode Table

RAGE MAGNUM Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
*32 - 24bpp color data is processed using a 32bpp data format.							
640x480	60	31.5	25.2	•	•	•	•
640x480	72	37.9	31.5	•	•	•	•
640x480	75	37.5	31.5	•	•	•	•
640x480	85	43.3	36.0	•	•	•	•
640x480	90	48.0	37.8	•	•	•	•
640x480	100	50.9	43.1	•	•	•	•
640x480	120	61.8	52.4	•	•	•	•
640x480	160	84.3	72.8	•	•	•	•
640x480	200	108.0	95.0	•	•	•	•
800x600	48	26.4	29.3	•	•	•	•
800x600	56	35.1	36.0	•	•	•	•
800x600	60	37.9	39.9	•	•	•	•
800x600	70	43.7	45.5	•	•	•	•
800x600	72	48.1	50.0	•	•	•	•
800x600	75	46.9	49.5	•	•	•	•
800x600	85	53.7	56.3	•	•	•	•
800x600	90	56.8	60.0	•	•	•	•
800x600	100	63.6	68.1	•	•	•	•
800x600	120	77.1	83.9	•	•	•	•
800x600	160	105.4	116.4	•	•	•	•
800x600	180	120.0	132.5	•	•	•	•
800x600	200	135.0	149.0	•	•	•	•
1024x768	43	35.5	44.9	•	•	•	•
1024x768	60	48.4	65.0	•	•	•	•



RAGE MAGNUM Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				8	16	24	*32
1024x768	70	56.5	75.0	•	•	•	•
1024x768	72	57.6	78.4	•	•	•	•
1024x768	75	60.0	78.8	•	•	•	•
1024x768	85	68.7	94.5	•	•	•	•
1024x768	90	72.8	100.1	•	•	•	•
1024x768	100	81.4	113.3	•	•	•	•
1024x768	120	98.7	139.0	•	•	•	•
1024x768	140	116.6	164.2	•	•	•	•
1024x768	150	125.7	176.9	•	•	•	•
1024x768	160	134.8	192.0	•	•	•	•
1024x768	180	153.5	218.6	•	•	•	•
1152x864	43	38.0	56.0	•	•	•	•
1152x864	47	41.7	62.1	•	•	•	•
1152x864	60	53.7	81.6	•	•	•	•
1152x864	70	63.0	96.7	•	•	•	•
1152x864	75	67.5	108.0	•	•	•	•
1152x864	80	72.4	112.3	•	•	•	•
1152x864	85	77.0	119.6	•	•	•	•
1152x864	100	91.5	143.4	•	•	•	•
1152x864	120	111.1	176.0	•	•	•	•
1152x864	150	141.4	226.3	•	•	•	•
1152x864	160	151.6	242.6	•	•	•	•
1280x1024	43	45.1	75.1	•	•	•	•
1280x1024	47	49.4	83.0	•	•	•	•
1280x1024	60	64.0	108.0	•	•	•	•
1280x1024	70	74.6	128.9	•	•	•	•
1280x1024	74	79.0	138.5	•	•	•	•
1280x1024	75	80.0	135.0	•	•	•	•
1280x1024	85	91.1	157.5	•	•	•	•
1280x1024	90	97.0	169.2	•	•	•	•
1280x1024	100	108.5	190.9	•	•	•	•
1280x1024	120	131.6	233.7	•	•	•	•
1280x1024	125	137.6	244.4	•	•	•	•
1600x1200	52	64.2	137.7	•	•	•	•
1600x1200	58	71.9	155.4	•	•	•	•
1600x1200	60	75.0	162.0	•	•	•	•
1600x1200	66	82.2	178.9	•	•	•	•
1600x1200	72	90.0	195.9	•	•	•	•
1600x1200	75	93.8	202.5	•	•	•	•
1600x1200	76	95.2	208.7	•	•	•	•
1600x1200	85	106.3	229.5	•	•	•	•



RAGE MAGNUM

RAGE MAGNUM Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
1800x1440	60	89.4	219.5	•	•	•	•
1800x1440	65	97.1	238.5	•	•	•	•
1800x1440	70	104.9	249.9	•	•	•	•
1920x1080	60	67.0	172.7	•	•	•	•
1920x1080	70	78.6	205.1	•	•	•	•
1920x1080	75	84.6	220.6	•	•	•	•
1920x1080	80	90.4	237.4	•	•	•	•
1920x1200	60	74.5	193.1	•	•	•	•
1920x1200	72	90.0	222.2	•	•	•	•
1920x1200	75	93.9	231.4	•	•	•	•
1920x1200	76	95.2	245.0	•	•	•	•
*32-24bpp color data is processed using a 32bpp data format. 2D and 3D resolutions and refresh rates are subject to change.							



RAGE MAGNUM

XPERT 128

Technical Information

System Requirements

PCI Version Pentium® 4/III/II or compatible with 33MHz PCI local bus 2.1

AGP Version Pentium® 4/III/II or compatible with AGP 2X bus (AGP 2.0 compliant)

CD-ROM drive required for software installation.

DVD drive required for DVD playback (Windows® NT 4.0 not supported).

Operating System Windows® 2000, Windows® 98, Windows® 95b. Windows® NT 4.0 (DVD playback not supported).

Specifications

Memory Configuration 16 MB, non-upgradable.

Sync Signals Separate horizontal and vertical sync at TTL levels.

TV Out Not available with this product.

Video BIOS PCI 2.1 compliant. AGP 2.0 compliant. Compatible with VESA for SVGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector.

Display Support DDC1/2b/2b+ monitor support; VESA Display Power Management support. Register compatible with VGA.

Video interrupt IRQ 11 is requested, although the actual IRQ number is automatically assigned by the Plug & Play system BIOS.

VIP Feature Connector 26-pin dual row header (male), VESA standard.

Power +5V $\pm 5\%$ @ 0.4 A typical.
+3.3V $\pm 5\%$ @ 1.4 A typical.
+12V $\pm 5\%$ @ 0.3 A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >300,000 hours.

EMC Certification FCC Class B.

Video Mode Table

XPERT 128 Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
*32 - 24bpp color data is processed using a 32bpp data format.							
640x480	60	31.5	25.2	•	•	•	•
640x480	72	37.9	31.5	•	•	•	•
640x480	75	37.5	31.5	•	•	•	•
640x480	85	43.3	36.0	•	•	•	•
640x480	90	48.0	37.8	•	•	•	•
640x480	100	50.9	43.1	•	•	•	•
640x480	120	61.8	52.4	•	•	•	•
640x480	160	84.3	72.8	•	•	•	•
640x480	200	108.0	95.0	•	•	•	•
800x600	48	26.4	29.3	•	•	•	•
800x600	56	35.1	36.0	•	•	•	•
800x600	60	37.9	39.9	•	•	•	•
800x600	70	43.7	45.5	•	•	•	•
800x600	72	48.1	50.0	•	•	•	•
800x600	75	46.9	49.5	•	•	•	•
800x600	85	53.7	56.3	•	•	•	•
800x600	90	56.8	60.0	•	•	•	•
800x600	100	63.6	68.1	•	•	•	•
800x600	120	77.1	83.9	•	•	•	•
800x600	160	105.4	116.4	•	•	•	•
800x600	180	120.0	132.5	•	•	•	•
800x600	200	135.0	149.0	•	•	•	•
1024x768	43	35.5	44.9	•	•	•	•
1024x768	60	48.4	65.0	•	•	•	•



XPERT 128 Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
1024x768	70	56.5	75.0	•	•	•	•
1024x768	72	57.6	78.4	•	•	•	•
1024x768	75	60.0	78.8	•	•	•	•
1024x768	85	68.7	94.5	•	•	•	•
1024x768	90	72.8	100.1	•	•	•	•
1024x768	100	81.4	113.3	•	•	•	•
1024x768	120	98.7	139.0	•	•	•	•
1024x768	140	116.6	164.2	•	•	•	•
1024x768	150	125.7	176.9	•	•	•	•
1024x768	160	134.8	192.0	•	•	•	•
1024x768	180	153.5	218.6	•	•	•	•
1152x864	43	38.0	56.0	•	•	•	•
1152x864	47	41.7	62.1	•	•	•	•
1152x864	60	53.7	81.6	•	•	•	•
1152x864	70	63.0	96.7	•	•	•	•
1152x864	75	67.5	108.0	•	•	•	•
1152x864	80	72.4	112.3	•	•	•	•
1152x864	85	77.0	119.6	•	•	•	•
1152x864	100	91.5	143.4	•	•	•	•
1152x864	120	111.1	176.0	•	•	•	•
1152x864	150	141.4	226.3	•	•	•	•
1152x864	160	151.6	242.6	•	•	•	•
1280x1024	43	45.1	75.1	•	•	•	•
1280x1024	47	49.4	83.0	•	•	•	•
1280x1024	60	64.0	108.0	•	•	•	•
1280x1024	70	74.6	128.9	•	•	•	•
1280x1024	74	79.0	138.5	•	•	•	•
1280x1024	75	80.0	135.0	•	•	•	•
1280x1024	85	91.1	157.5	•	•	•	•
1280x1024	90	97.0	169.2	•	•	•	•
1280x1024	100	108.5	190.9	•	•	•	•
1280x1024	120	131.6	233.7	•	•	•	•
1280x1024	125	137.6	244.4	•	•	•	•
1600x1200	52	64.2	137.7	•	•	•	•
1600x1200	58	71.9	155.4	•	•	•	•
1600x1200	60	75.0	162.0	•	•	•	•
1600x1200	66	82.2	178.9	•	•	•	•
1600x1200	72	90.0	195.9	•	•	•	•
1600x1200	75	93.8	202.5	•	•	•	•
1600x1200	76	95.2	208.7	•	•	•	•
1600x1200	85	106.3	229.5	•	•	•	•



XPERT 128 Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
1800x1440	60	89.4	219.5	•	•	•	•
1800x1440	65	97.1	238.5	•	•	•	•
1800x1440	70	104.9	249.9	•	•	•	•
1920x1080	60	67.0	172.7	•	•	•	•
1920x1080	70	78.6	205.1	•	•	•	•
1920x1080	75	84.6	220.6	•	•	•	•
1920x1080	80	90.4	237.4	•	•	•	•
1920x1200	60	74.5	193.1	•	•	•	•
1920x1200	72	90.0	222.2	•	•	•	•
1920x1200	75	93.9	231.4	•	•	•	•
1920x1200	76	95.2	245.0	•	•	•	•
*32-24bpp color data is processed using a 32bpp data format. 2D and 3D resolutions and refresh rates are subject to change.							



XPERT 98 XPERT LCD XPERT@WORK XPERT@PLAY

Technical Information

System Requirements

AGP Version Pentium® 4/III/II, Celeron™, or compatible with AGP 2X bus (AGP 1.0 compliant).

PCI Version Pentium® 4/III/II, Celeron™, or compatible with 33MHz PCI local bus 2.1.

CD-ROM drive required for software installation.

Operating System DOS® 5 or higher, Windows® 3.1x, Windows® 95, Windows® 98, Windows® 2000, Windows® NT 4.0.

Specifications

Memory Configurations Xpert@Work: 2MB upgradeable to 4MB or 6MB; 4MB upgradeable to 6MB or 8MB; 8MB. Xpert@Play: 4MB upgradeable to 8MB; 8MB. Xpert 98 and Xpert LCD: 8MB only.

Sync Signals Separate horizontal and vertical sync at TTL levels.

TV Output Connectors Composite and S-Video (NTSC or PAL standard) (Xpert@Play, Xpert LCD versions only).

Video BIOS PCI 2.1 compliant. AGP 1.0 compliant. Compatible with VESA for SVGA.

Monitor Support 15-pin D shell (female), IBM standard VGA connector. Xpert LCD: 20-pin DFP connector (female).

Video Interrupt Auto-configured by system for PCI or AGP, as required.



AMC Feature Connector 2x20 pin header. Shares the same footprint with the 2x13 pin VGA Feature Connector, VGA Out only, VESA standard.

Power +5V $\pm 5\%$ @ 0.4 A typical.
+3.3V $\pm 5\%$ @ 1.4 A typical.

Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >250,000 hours.

EMC Certification FCC Class B.

Video Mode Table

XPERT 98 / XPERT LCD Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				8 MB			
				8	16	24	*32
640x480	60	31.5	25.2	*	*	*	*
640x480	72	37.4	32.0	*	*	*	*
640x480	75	37.5	31.5	*	*	*	*
640x480	85	43.3	36.0	*	*	*	*
640x480	90	48.0	39.9	*	*	*	*
640x480	100	52.9	44.9	*	*	*	*
640x480	120	63.7	55.0	*	*	*	*
640x480	160	81.0	70.0	*	*	*	*
640x480	200	100.2	81.0	*	*	*	*
800x600	48	33.8	36.0	*	*	*	*
800x600	56	35.2	36.0	*	*	*	*
800x600	60	37.8	39.9	*	*	*	*
800x600	70	44.5	44.9	*	*	*	*
800x600	72	48.0	50.0	*	*	*	*
800x600	75	46.9	49.5	*	*	*	*
800x600	85	53.7	56.3	*	*	*	*
800x600	90	56.6	56.6	*	*	*	*
800x600	100	63.9	67.5	*	*	*	*
800x600	120	76.1	81.0	*	*	*	*



XPERT 98 / XPERT LCD Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel) 8 MB			
				8	16	24	*32
800x600	160	101.9	110.0	*	*	*	*
800x600	200	125.9	135.0	*	*	*	*
1024x768	43	35.5	44.9	*	*	*	*
1024x768	60	48.4	65.0	*	*	*	*
1024x768	70	56.1	75.0	*	*	*	*
1024x768	72	57.9	75.0	*	*	*	*
1024x768	75	60.0	78.8	*	*	*	*
1024x768	85	68.7	94.5	*	*	*	*
1024x768	90	76.2	100.0	*	*	*	*
1024x768	100	80.4	110.0	*	*	*	*
1024x768	120	96.7	130.0	*	*	*	*
1024x768	140	113.1	157.5	*	*	*	*
1024x768	150	120.6	160.0	*	*	*	*
1152x864	43	45.9	65.0	*	*	*	*
1152x864	47	44.9	65.0	*	*	*	*
1152x864	60	54.9	80.0	*	*	*	*
1152x864	70	66.1	100.0	*	*	*	*
1152x864	75	75.1	110.0	*	*	*	*
1152x864	80	76.4	110.0	*	*	*	*
1152x864	85	77.1	121.5	*	*	*	*
1152x864	100	90.2	135.0	*	*	*	*
1152x864	120	108.6	172.0	*	*	*	*
1280x1024	43	50.0	80.0	*	*	*	*
1280x1024	47	50.0	80.0	*	*	*	*
1280x1024	60	64.0	110.0	*	*	*	*
1280x1024	70	74.6	126.0	*	*	*	*
1280x1024	74	77.9	135.0	*	*	*	*
1280x1024	75	80.0	135.0	*	*	*	*
1280x1024	85	91.2	157.5	*	*	*	*
1280x1024	90	96.2	160.0	*	*	*	*
1280x1024	100	106.4	172.0	*	*	*	*
1600x1200	52	68.0	135.0	*	*	*	*
1600x1200	58	75.0	135.0	*	*	*	*
1600x1200	60	76.2	156.0	*	*	*	*
1600x1200	66	82.7	172.0	*	*	*	*
1600x1200	72	89.7	194.4	*	*	*	*
1600x1200	75	93.8	202.5	*	*	*	*
1600x1200	76	95.2	198.0	*	*	*	*
1600x1200	85	106.2	229.5	*	*	*	*
*32 - 24bpp color data is processed using a 32bpp data format. 2D and 3D resolutions and refresh rates are subject to change.							



XPERT@WORK / XPERT@PLAY Video Mode Table																
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)												
				2 MB				4 MB				6 MB or 8 MB				
				8	16	24	*32	8	16	24	*32	8	16	24	*32	
640x480	60	31.5	25.2	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	72	37.4	32.0	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	75	37.5	31.5	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	85	43.3	36.0	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	90	48.0	39.9	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	100	52.9	44.9	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	120	63.7	55.0	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	160	81.0	70.0	*	*	*	*	*	*	*	*	*	*	*	*	*
640x480	200	100.2	81.0	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	48	33.8	36.0	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	56	35.2	36.0	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	60	37.8	39.9	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	70	44.5	44.9	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	72	48.0	50.0	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	75	46.9	49.5	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	85	53.7	56.3	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	90	56.6	56.6	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	100	63.9	67.5	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	120	76.1	81.0	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	160	101.9	110.0	*	*	*	*	*	*	*	*	*	*	*	*	*
800x600	200	125.9	135.0	*	*	*	*	*	*	*	*	*	*	*	*	*
1024x768	43	35.5	44.9	*	*	*	*	*	*	*	*	*	*	*	*	*
1024x768	60	48.4	65.0	*	*			*	*	*	*	*	*	*	*	*
1024x768	70	56.1	75.0	*	*			*	*	*	*	*	*	*	*	*
1024x768	72	57.9	75.0	*	*			*	*	*	*	*	*	*	*	*
1024x768	75	60.0	78.8	*	*			*	*	*	*	*	*	*	*	*
1024x768	85	68.7	94.5	*	*			*	*	*	*	*	*	*	*	*
1024x768	90	76.2	100.0	*	*			*	*	*	*	*	*	*	*	*
1024x768	100	80.4	110.0	*	*			*	*	*	*	*	*	*	*	*
1024x768	120	96.7	130.0	*	*			*	*	*	*	*	*	*	*	*
1024x768	140	113.1	157.5	*	*			*	*	*	*	*	*	*	*	*
1024x768	150	120.6	160.0	*	*			*	*	*	*	*	*	*	*	*
1152x864	43	45.9	65.0	*	*			*	*	*	*	*	*	*	*	*
1152x864	47	44.9	65.0	*	*			*	*	*	*	*	*	*	*	*
1152x864	60	54.9	80.0	*	*			*	*	*	*	*	*	*	*	*
1152x864	70	66.1	100.0	*	*			*	*	*	*	*	*	*	*	*
1152x864	75	75.1	110.0	*	*			*	*	*	*	*	*	*	*	*
1152x864	80	76.4	110.0	*	*			*	*	*	*	*	*	*	*	*
1152x864	85	77.1	121.5	*	*			*	*	*	*	*	*	*	*	*



XPERT@WORK / XPERT@PLAY Video Mode Table															
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)											
				2 MB				4 MB				6 MB or 8 MB			
				8	16	24	*32	8	16	24	*32	8	16	24	*32
1152x864	100	90.2	135.0	*	*			*	*	*	*	*	*	*	*
1152x864	120	108.6	172.0	*	*			*	*	*		*	*	*	
1280x1024	43	50.0	80.0	*				*	*	*		*	*	*	*
1280x1024	47	50.0	80.0	*				*	*	*		*	*	*	*
1280x1024	60	64.0	110.0	*				*	*	*		*	*	*	*
1280x1024	70	74.6	126.0	*				*	*	*		*	*	*	*
1280x1024	74	77.9	135.0	*				*	*	*		*	*	*	*
1280x1024	75	80.0	135.0	*				*	*	*		*	*	*	*
1280x1024	85	91.2	157.5	*				*	*	*		*	*	*	*
1280x1024	90	96.2	160.0	*				*	*	*		*	*	*	*
1280x1024	100	106.4	172.0	*				*	*	*		*	*	*	*
1600x1200	52	68.0	135.0	*				*	*			*	*	*	*
1600x1200	58	75.0	135.0	*				*	*			*	*	*	*
1600x1200	60	76.2	156.0	*				*	*			*	*	*	*
1600x1200	66	82.7	172.0	*				*	*			*	*	*	*
1600x1200	72	89.7	194.4	*				*	*			*	*	*	*
1600x1200	75	93.8	202.5	*				*	*			*	*	*	*
1600x1200	76	95.2	198.0	*				*	*			*	*	*	*
1600x1200	85	106.2	229.5	*				*	*			*	*		
*32 - 24bpp color data is processed using a 32bpp data format. 2D and 3D resolutions and refresh rates are subject to change.															



XPERT 99

Technical Information

System Requirements

Pentium® 4/III/II, AMD® K6/Athlon or compatible system with AGP 2X slot.

AGP 1.0 compliant.

CD-ROM drive required for software installation.

DVD drive required for DVD playback (Windows® NT 4.0 not supported).

Operating System Windows® 2000, Windows® 98, Windows® 95b. Windows® NT 4.0 (DVD playback not supported).

Specifications

Memory Configuration 8 MB, non-upgradable.

Sync Signals Separate horizontal and vertical sync at TTL levels.

TV Out Not available with this product.

Video BIOS AGP 1.0 compliant. Compatible with VESA for SVGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector.

Display Support DDC1/2b/2b+ monitor support; VESA Display Power Management support. Register compatible with VGA.

Video interrupt IRQ 11 is requested, although the actual IRQ number is automatically assigned by the Plug & Play system BIOS.

VIP Feature Connector 26-pin dual row header (male), VESA standard.

Power +5V $\pm 5\%$ @ 0.4 A typical.
+3.3V $\pm 5\%$ @ 1.4 A typical.
+12V $\pm 5\%$ @ 0.3 A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >300,000 hours.

EMC Certification FCC Class B.

Video Mode Table

XPERT 99 Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				8 MB			
				8	16	24	*32
640x480	60	31.5	25.2	•	•	•	•
640x480	72	37.9	31.5	•	•	•	•
640x480	75	37.5	31.5	•	•	•	•
640x480	85	43.3	36.0	•	•	•	•
640x480	90	45.4	37.8	•	•	•	•
640x480	100	50.9	43.1	•	•	•	•
640x480	120	61.8	52.4	•	•	•	•
640x480	160	84.3	72.8	•	•	•	•
640x480	200	108.0	95.0	•	•	•	•
800x600	48	26.4	29.3	•	•	•	•
800x600	56	35.1	36.0	•	•	•	•
800x600	60	37.9	39.9	•	•	•	•
800x600	70	43.7	45.5	•	•	•	•
800x600	72	48.1	50.0	•	•	•	•
800x600	75	46.9	49.5	•	•	•	•
800x600	85	53.7	56.3	•	•	•	•
800x600	90	56.8	60.0	•	•	•	•
800x600	100	63.6	68.1	•	•	•	•
800x600	120	77.1	83.9	•	•	•	•
800x600	160	105.4	116.4	•	•	•	•
800x600	180	120.0	132.5	•	•	•	•
800x600	200	135.0	149.0	•	•	•	•
1024x768	43	35.5	44.9	•	•	•	•
1024x768	60	48.4	65.0	•	•	•	•
1024x768	70	56.5	75.0	•	•	•	•



XPERT 99 Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel) 8 MB			
				8	16	24	*32
1024x768	72	57.6	78.4	•	•	•	•
1024x768	75	60.0	78.8	•	•	•	•
1024x768	85	68.7	94.5	•	•	•	•
1024x768	90	72.8	100.1	•	•	•	•
1024x768	100	81.4	113.3	•	•	•	•
1024x768	120	98.7	139.0	•	•	•	•
1024x768	140	116.6	164.2	•	•	•	•
1024x768	150	125.7	176.9	•	•	•	•
1024x768	160	134.8	192.0	•	•	•	•
1152x864	43	38.0	56.0	•	•	•	•
1152x864	47	41.7	62.1	•	•	•	•
1152x864	60	53.7	81.6	•	•	•	•
1152x864	70	63.0	96.7	•	•	•	•
1152x864	75	67.5	108.0	•	•	•	•
1152x864	80	72.4	112.3	•	•	•	•
1152x864	85	77.0	119.6	•	•	•	•
1152x864	100	91.5	143.4	•	•	•	•
1152x864	120	111.1	176.0	•	•	•	•
1152x864	140	141.4	226.3	•	•	•	•
1152x864	150	151.6	242.6	•	•	•	•
1280x1024	43	45.1	75.1	•	•	•	•
1280x1024	47	49.4	83.0	•	•	•	•
1280x1024	60	64.0	108.0	•	•	•	•
1280x1024	70	74.6	128.9	•	•	•	•
1280x1024	74	79.0	138.5	•	•	•	•
1280x1024	75	80.0	135.0	•	•	•	•
1280x1024	85	91.1	157.5	•	•	•	•
1280x1024	90	97.0	169.2	•	•	•	•
1280x1024	100	108.5	190.9	•	•	•	•
1280x1024	120	131.6	233.7	•	•	•	•
1600x1200	52	64.2	137.7	•	•	•	•
1600x1200	58	71.9	155.4	•	•	•	•
1600x1200	60	75.0	162.0	•	•	•	•
1600x1200	66	82.2	178.9	•	•	•	•
1600x1200	72	90.0	195.9	•	•	•	•
1600x1200	75	93.8	202.5	•	•	•	•
1600x1200	76	95.2	208.7	•	•	•	•
1600x1200	85	106.3	229.5	•	•	•	•
*32-24bpp color data is processed using a 32bpp data format 2D and 3D resolutions and refresh rates are subject to change							



XPERT 2000

Technical Information

System Requirements

Pentium® 4/III/II, AMD® K6/Athlon, or compatible system with AGP 2X slot.

AGP 2.0 compliant.

CD-ROM drive required for software installation.

DVD drive required for DVD playback (Windows® NT 4.0 not supported).

Operating System Windows® 2000, Windows® 98, Windows® 95b, Windows® NT 4.0 (DVD playback not supported).

Specifications

Memory Configuration 32 MB, non-upgradable.

Sync Signals Separate horizontal and vertical sync at TTL levels.

Video BIOS AGP 2.0 compliant. Compatible with VESA for SVGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector.

Display Support DDC1/2b/2b+ monitor support; VESA Display Power Management support. Register compatible with VGA.

Video interrupt IRQ 11 is requested, although the actual IRQ number is automatically assigned by the Plug & Play system BIOS.

Power +5V ±5% @ 0.4A typical.
+3.3V ±5% @ 1.4A typical.
+12V ±5% @ 0.3A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >300,000 hours.

EMC Certification FCC Class B.

Video Mode Table

XPERT 2000 Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
640x480	60	31.5	25.2	•	•	•	•
640x480	72	37.9	31.5	•	•	•	•
640x480	75	37.5	31.5	•	•	•	•
640x480	85	43.3	36.0	•	•	•	•
640x480	90	45.4	37.8	•	•	•	•
640x480	100	50.9	43.1	•	•	•	•
640x480	120	61.8	52.4	•	•	•	•
640x480	160	84.3	72.8	•	•	•	•
640x480	200	108.0	95.0	•	•	•	•
800x600	56	35.1	36.0	•	•	•	•
800x600	60	37.9	39.9	•	•	•	•
800x600	70	43.7	45.5	•	•	•	•
800x600	72	48.1	50.0	•	•	•	•
800x600	75	46.9	49.5	•	•	•	•
800x600	85	53.7	56.3	•	•	•	•
800x600	90	56.8	60.0	•	•	•	•
800x600	100	63.6	68.1	•	•	•	•
800x600	120	77.1	83.9	•	•	•	•
800x600	160	105.4	116.4	•	•	•	•
800x600	180	120.0	132.5	•	•	•	•
800x600	200	135.0	149.0	•	•	•	•
1024x768	60	48.4	65.0	•	•	•	•
1024x768	70	56.5	75.0	•	•	•	•
1024x768	72	57.6	78.4	•	•	•	•
1024x768	75	60.0	78.8	•	•	•	•



XPERT 2000 Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)			
				32 MB			
				8	16	24	*32
1024x768	85	68.7	94.5	•	•	•	•
1024x768	90	72.8	100.1	•	•	•	•
1024x768	100	81.4	113.3	•	•	•	•
1024x768	120	98.7	139.0	•	•	•	•
1024x768	140	116.6	164.2	•	•	•	•
1024x768	150	125.7	176.9	•	•	•	•
1024x768	160	134.8	192.0	•	•	•	•
1152x864	47	41.7	62.1	•	•	•	•
1152x864	60	53.7	81.6	•	•	•	•
1152x864	70	63.0	96.7	•	•	•	•
1152x864	75	67.5	108.0	•	•	•	•
1152x864	80	72.4	112.3	•	•	•	•
1152x864	85	77.0	119.6	•	•	•	•
1152x864	100	91.5	143.4	•	•	•	•
1152x864	120	111.1	176.0	•	•	•	•
1152x864	150	141.4	226.3	•	•	•	•
1280x1024	43	45.1	75.1	•	•	•	•
1280x1024	47	49.4	83.0	•	•	•	•
1280x1024	60	64.0	108.0	•	•	•	•
1280x1024	70	74.6	128.9	•	•	•	•
1280x1024	74	79.0	138.5	•	•	•	•
1280x1024	75	80.0	135.0	•	•	•	•
1280x1024	85	91.1	157.5	•	•	•	•
1280x1024	90	97.0	169.2	•	•	•	•
1280x1024	100	108.5	190.9	•	•	•	•
1280x1024	120	131.6	233.7	•	•	•	•
1600x1200	52	64.2	137.7	•	•	•	•
1600x1200	58	71.9	155.4	•	•	•	•
1600x1200	60	75.0	162.0	•	•	•	•
1600x1200	66	82.2	178.9	•	•	•	•
1600x1200	72	90.0	195.9	•	•	•	•
1600x1200	75	93.8	202.5	•	•	•	•
1600x1200	76	95.2	208.7	•	•	•	•
1600x1200	85	106.3	229.5	•	•	•	•
1920x1200	60	74.5	193.1	•	•	•	•
1920x1200	72	90.0	222.2	•	•	•	•
1920x1200	75	93.9	231.4	•	•	•	•
1920x1200	76	95.2	245.0	•	•	•	•
1920x1440	60	89.4	234.5	•	•	•	•
1920x1440	75	112.7	297.6	•	•	•	•
*32 - 24bpp color data is processed using a 32bpp data format. 2D and 3D resolutions and refresh rates are subject to change.							



XPERT 2000 PRO

Technical Information

System Requirements

Pentium® 4/III/II, AMD® K6/Athlon or compatible system with AGP 2X or AGP 2X/4X universal slot.

AGP 2.0 compliant.

CD-ROM drive required for software installation.

DVD drive required for DVD playback (Windows® NT 4.0 not supported).

Operating System Windows® 2000, Windows® 98, Windows® 95b. Windows® NT 4.0 (DVD playback not supported).

Specifications

Memory Configurations 16MB or 32 MB non-upgradable.

Sync Signals Separate horizontal and vertical sync at TTL levels.

Video BIOS AGP 2.0 compliant. Compatible with VESA for SVGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector.

Display Support DDC1/2b/2b+ monitor support; VESA Display Power Management support. Register compatible with VGA.

Video interrupt IRQ 11 is requested, although the actual IRQ number is automatically assigned by the Plug & Play system BIOS.

Power +5V ±5% @ 0.4A typical.
+3.3V ±5% @ 1.4A typical.
+12V ±5% @ 0.3A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >300,000 hours.

EMC Certification FCC Class B.

Video Mode Table

XPERT 2000 PRO Video Mode Table											
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)							
				16 MB				32 MB			
				8	16	24	*32	8	16	24	*32
640x480	60	31.5	25.2	*	*	*	*	*	*	*	*
640x480	72	37.9	31.5	*	*	*	*	*	*	*	*
640x480	75	37.5	31.5	*	*	*	*	*	*	*	*
640x480	85	43.3	36.0	*	*	*	*	*	*	*	*
640x480	90	45.4	37.8	*	*	*	*	*	*	*	*
640x480	100	50.9	43.1	*	*	*	*	*	*	*	*
640x480	120	61.8	52.4	*	*	*	*	*	*	*	*
640x480	160	84.3	72.8	*	*	*	*	*	*	*	*
640x480	200	108.0	95.0	*	*	*	*	*	*	*	*
800x600	48	26.4	29.3	*	*	*	*	*	*	*	*
800x600	56	35.1	36.0	*	*	*	*	*	*	*	*
800x600	60	37.9	39.9	*	*	*	*	*	*	*	*
800x600	70	43.7	45.5	*	*	*	*	*	*	*	*
800x600	72	48.1	50.0	*	*	*	*	*	*	*	*
800x600	75	46.9	49.5	*	*	*	*	*	*	*	*
800x600	85	53.7	56.3	*	*	*	*	*	*	*	*
800x600	90	56.8	60.0	*	*	*	*	*	*	*	*
800x600	100	63.6	68.1	*	*	*	*	*	*	*	*
800x600	120	77.0	83.2	*	*	*	*	*	*	*	*
800x600	160	105.4	116.4	*	*	*	*	*	*	*	*
800x600	200	135.0	149.0	*	*	*	*	*	*	*	*
1024x768	43	35.5	44.9	*	*	*	*	*	*	*	*
1024x768	60	48.4	65.0	*	*	*	*	*	*	*	*
1024x768	70	56.5	75.0	*	*	*	*	*	*	*	*
1024x768	72	56.6	78.4	*	*	*	*	*	*	*	*
1024x768	75	60.0	78.8	*	*	*	*	*	*	*	*



XPERT 2000 PRO Video Mode Table												
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)								
				16 MB				32 MB				
				8	16	24	*32	8	16	24	*32	
1024x768	85	68.7	94.5	*	*	*	*	*	*	*	*	
1024x768	90	72.8	100.1	*	*	*	*	*	*	*	*	
1024x768	100	81.4	113.3	*	*	*	*	*	*	*	*	
1024x768	120	98.7	139.0	*	*	*	*	*	*	*	*	
1024x768	140	116.6	164.2	*	*	*	*	*	*	*	*	
1024x768	150	125.7	176.9	*	*	*	*	*	*	*	*	
1024X768	160	134.8	192.0	*	*	*	*	*	*	*	*	
1024x768	180	153.5	218.6	*	*	*	*	*	*	*	*	
1024X768	200	172.8	246.1	*	*	*	*	*	*	*	*	
1152x864	60	53.7	81.6	*	*	*	*	*	*	*	*	
1152x864	70	63.0	96.7	*	*	*	*	*	*	*	*	
1152x864	75	67.5	108.0	*	*	*	*	*	*	*	*	
1152x864	80	72.4	112.3	*	*	*	*	*	*	*	*	
1152x864	85	77.0	119.6	*	*	*	*	*	*	*	*	
1152x864	100	91.5	143.4	*	*	*	*	*	*	*	*	
1152x864	120	111.1	176.0	*	*	*	*	*	*	*	*	
1152x864	150	141.4	226.3	*	*	*	*	*	*	*	*	
1152x864	160	151.6	242.6	*	*	*	*	*	*	*	*	
1280x1024	60	64.0	108.0	*	*	*	*	*	*	*	*	
1280x1024	70	74.6	128.9	*	*	*	*	*	*	*	*	
1280x1024	74	79.0	138.5	*	*	*	*	*	*	*	*	
1280x1024	75	80.0	135.0	*	*	*	*	*	*	*	*	
1280x1024	85	91.1	157.5	*	*	*	*	*	*	*	*	
1280x1024	90	97.0	169.2	*	*	*	*	*	*	*	*	
1280x1024	100	108.5	190.9	*	*	*	*	*	*	*	*	
1280X1024	120	131.6	233.7	*	*	*	*	*	*	*	*	
1280X1024	125	137.6	244.4	*	*	*	*	*	*	*	*	
1280X1024	130	143.5	254.9	*	*	*	*	*	*	*	*	
1600x1200	72	90.0	195.9	*	*			*	*	*	*	
1600x1200	75	93.8	202.5	*	*			*	*	*	*	
1600x1200	76	95.2	208.7	*	*			*	*	*	*	
1600x1200	85	106.3	229.5	*	*			*	*	*	*	
1600x1200	90	113.8	251.2	*	*			*	*	*	*	
1920x1200	72	90.0	222.2					*	*	*	*	
1920x1200	75	93.9	231.4					*	*	*	*	
1920x1200	76	95.2	245.0					*	*	*	*	
1920x1200	80	100.5	263.7					*	*	*	*	
1920x1200	85	107.1	282.7					*	*	*	*	
1920x1440	60	89.4	234.5					*	*			
1920x1440	75	112.7	297.6					*	*			
*32 - 24bpp color data is processed using a 32bpp data format. 2D and 3D resolutions and refresh rates are subject to change.												



RADEON™ 32MB DDR

Technical Information

System Requirements

Pentium® 4/III/II, Celeron™, AMD® K6/Athlon or compatible system with AGP 2X or AGP 2X/4X universal slot.

AGP 2.0 compliant.

CD-ROM drive required for software installation.

DVD drive required for DVD playback (Windows® NT 4.0 not supported).

Operating System Windows® 2000 Windows® 98 SE Windows® Me

Specifications

Memory Configuration 32MB Double Data Rate non-upgradable.

Sync Signals Separate horizontal and vertical sync at TTL levels.

Video BIOS Compatible with VESA for Super VGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector. Optional 28-pin DVI connector (female).

Display Support DDC1/2b/2b+ monitor support; VESA Display Power Management support. Register compatible with VGA.

Power +5V ±5% @ 0.4A typical.
+3.3V ±5% @ 1.4A typical.
+12V ±5% @ 0.3A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >300,000 hours.

EMC Certification FCC Class B.

RADEON 32MB DDR Video Mode Table						
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits per pixel)		
				8	16	32
640x480	60	31.5	25.2	•	•	•
640x480	72	37.9	31.5	•	•	•
640x480	75	37.5	31.5	•	•	•
640x480	85	43.3	36.0	•	•	•
640x480	90	45.4	37.8	•	•	•
640x480	100	50.9	43.1	•	•	•
640x480	120	61.8	52.4	•	•	•
640x480	160	84.3	72.8	•	•	•
640x480	200	108.0	95.0	•	•	•
800x600	60	37.9	39.9	•	•	•
800x600	70	43.7	45.5	•	•	•
800x600	72	48.1	50.0	•	•	•
800x600	75	46.9	49.5	•	•	•
800x600	85	53.7	56.3	•	•	•
800x600	90	56.8	60.0	•	•	•
800x600	100	63.6	68.1	•	•	•
800x600	120	77.0	83.2	•	•	•
800x600	160	105.4	116.4	•	•	•
800x600	200	135.0	149.0	•	•	•
1024x768	70	56.5	75.0	•	•	•
1024x768	72	56.6	78.4	•	•	•
1024x768	75	60.0	78.8	•	•	•
1024x768	85	68.7	94.5	•	•	•
1024x768	90	72.8	100.1	•	•	•
1024x768	100	81.4	113.3	•	•	•
1024x768	120	98.7	139.0	•	•	•
1024x768	140	116.6	164.2	•	•	•



RADEON 32MB DDR Video Mode Table						
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits per pixel)		
				8	16	32
1024x768	150	125.7	176.9	•	•	•
1024X768	160	134.8	192.0	•	•	•
1024x768	180	153.5	218.6	•	•	•
1024X768	200	172.8	246.1	•	•	•
1152x864	60	53.7	81.6	•	•	•
1152x864	70	63.0	96.7	•	•	•
1152x864	75	67.5	108.0	•	•	•
1152x864	80	72.4	112.3	•	•	•
1152x864	85	77.0	119.6	•	•	•
1152x864	100	91.5	143.4	•	•	•
1152x864	120	111.1	176.0	•	•	•
1152x864	150	141.4	226.3	•	•	•
1280x1024	60	64.0	108.0	•	•	•
1280x1024	70	74.6	128.9	•	•	•
1280x1024	74	79.0	138.5	•	•	•
1280x1024	75	80.0	135.0	•	•	•
1280x1024	85	91.1	157.5	•	•	•
1280x1024	90	97.0	169.2	•	•	•
1280x1024	100	108.5	190.9	•	•	•
1280X1024	120	131.6	233.7	•	•	•
1280X1024	125	137.6	244.4	•	•	•
1280X1024	130	143.5	254.9	•	•	•
1600x1200	52	64.2	137.7	•	•	•
1600x1200	58	71.9	155.4	•	•	•
1600x1200	60	75.0	162.0	•	•	•
1600x1200	66	82.2	178.9	•	•	•
1600x1200	72	90.0	195.9	•	•	•
1600x1200	75	93.8	202.5	•	•	•
1600x1200	76	95.2	208.7	•	•	•
1600x1200	85	106.3	229.5	•	•	•
1600x1200	90	113.8	251.2	•	•	•
1920x1440	60	90.0	234.0	•	•	•
1920x1440	75	112.5	297.0	•	•	•
2048x1536	75	120.2	340.4	•	•	•
Some display modes and color depths may not be available for all drivers. 2D & 3D resolutions & refresh rates are subject to change.						



RADEON 32MB DDR DVI (Flat Panel Display) Modes	
Display Screen Resolution	Refresh Rate (Hz)
640x480	85
800x600	85
1024x768	85
1280x1024	75
DVI (Flat Panel) display cannot be used concurrently with TV-output display.	
DVI "hotplugging" is not supported.	



RADEON™ 64MB DDR

Technical Information

System Requirements

Pentium® 4/III/II, Celeron™, AMD® K6/Athlon or compatible system with AGP 2X or AGP 2X/4X universal slot.

AGP 2.0 compliant.

CD-ROM drive required for software installation.

DVD drive required for DVD playback (Windows® NT 4.0 not supported).

Operating System Windows® 2000 Windows® 98 SE Windows® Me

Specifications

Memory Configuration 64MB Double Data Rate non-upgradable.

Sync Signals Separate horizontal and vertical sync at TTL levels.

Video BIOS Compatible with VESA for Super VGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector. Optional 28-pin DVI connector (female).

Display Support DDC1/2b/2b+ monitor support; VESA Display Power Management support. Register compatible with VGA.

TV/Video-out Connectors Composite and S-Video. NTSC output.

Video-in Connector Composite.

Video Capture ATI Rage Theatre™ chip. Full motion video capture (MPEG-1 and MPEG-2) and still image capture

Power +5V ±5% @ 0.4A typical.
+3.3V ±5% @ 1.4A typical.
+12V ±5% @ 0.3A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >300,000 hours.

EMC Certification FCC Class B.

RADEON 64MB DDR Video Mode Table						
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits per pixel)		
				8	16	32
640x480	60	31.5	25.2	•	•	•
640x480	72	37.9	31.5	•	•	•
640x480	75	37.5	31.5	•	•	•
640x480	85	43.3	36.0	•	•	•
640x480	90	45.4	37.8	•	•	•
640x480	100	50.9	43.1	•	•	•
640x480	120	61.8	52.4	•	•	•
640x480	160	84.3	72.8	•	•	•
640x480	200	108.0	95.0	•	•	•
800x600	60	37.9	39.9	•	•	•
800x600	70	43.7	45.5	•	•	•
800x600	72	48.1	50.0	•	•	•
800x600	75	46.9	49.5	•	•	•
800x600	85	53.7	56.3	•	•	•
800x600	90	56.8	60.0	•	•	•
800x600	100	63.6	68.1	•	•	•
800x600	120	77.0	83.2	•	•	•
800x600	160	105.4	116.4	•	•	•
800x600	200	135.0	149.0	•	•	•
1024x768	70	56.5	75.0	•	•	•
1024x768	72	56.6	78.4	•	•	•
1024x768	75	60.0	78.8	•	•	•
1024x768	85	68.7	94.5	•	•	•
1024x768	90	72.8	100.1	•	•	•
1024x768	100	81.4	113.3	•	•	•
1024x768	120	98.7	139.0	•	•	•
1024x768	140	116.6	164.2	•	•	•



RADEON 64MB DDR Video Mode Table						
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits per pixel)		
				8	16	32
1024x768	150	125.7	176.9	•	•	•
1024X768	160	134.8	192.0	•	•	•
1024x768	180	153.5	218.6	•	•	•
1024X768	200	172.8	246.1	•	•	•
1152x864	60	53.7	81.6	•	•	•
1152x864	70	63.0	96.7	•	•	•
1152x864	75	67.5	108.0	•	•	•
1152x864	80	72.4	112.3	•	•	•
1152x864	85	77.0	119.6	•	•	•
1152x864	100	91.5	143.4	•	•	•
1152x864	120	111.1	176.0	•	•	•
1152x864	150	141.4	226.3	•	•	•
1280x1024	60	64.0	108.0	•	•	•
1280x1024	70	74.6	128.9	•	•	•
1280x1024	74	79.0	138.5	•	•	•
1280x1024	75	80.0	135.0	•	•	•
1280x1024	85	91.1	157.5	•	•	•
1280x1024	90	97.0	169.2	•	•	•
1280x1024	100	108.5	190.9	•	•	•
1280X1024	120	131.6	233.7	•	•	•
1280X1024	125	137.6	244.4	•	•	•
1280X1024	130	143.5	254.9	•	•	•
1600x1200	52	64.2	137.7	•	•	•
1600x1200	58	71.9	155.4	•	•	•
1600x1200	60	75.0	162.0	•	•	•
1600x1200	66	82.2	178.9	•	•	•
1600x1200	72	90.0	195.9	•	•	•
1600x1200	75	93.8	202.5	•	•	•
1600x1200	76	95.2	208.7	•	•	•
1600x1200	85	106.3	229.5	•	•	•
1600x1200	90	113.8	251.2	•	•	•
1920x1440	60	90.0	234.0	•	•	•
1920x1440	75	112.5	297.0	•	•	•
2048x1536	75	120.2	340.4	•	•	•
Some display modes and color depths may not be available for all drivers. 2D & 3D resolutions & refresh rates are subject to change.						



RADEON 64MB DDR DVI (Flat Panel Display) Modes	
Display Screen Resolution	Refresh Rate (Hz)
640x480	85
800x600	85
1024x768	85
1280x1024	75
DVI (Flat Panel) display cannot be used concurrently with TV-output display.	
DVI "hotplugging" is not supported.	



RADEON™ 32MB SDR

Technical Information

System Requirements

Pentium® 4/III/II, Celeron™, AMD® K6/Athlon or compatible system with AGP 2X or AGP 2X/4X universal slot.

AGP 2.0 compliant.

CD-ROM drive required for software installation.

DVD drive required for DVD playback (Windows® NT 4.0 not supported).

Operating System Windows® 2000 Windows® 98 SE Windows® Me

Specifications

Memory Configuration 32MB Single Data Rate non-upgradable.

Sync Signals Separate horizontal and vertical sync at TTL levels.

Video BIOS Compatible with VESA for Super VGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector. Optional 28-pin DVI connector (female).

Display Support DDC1/2b/2b+ monitor support; VESA Display Power Management support. Register compatible with VGA.

Power +5V ±5% @ 0.4A typical.
+3.3V ±5% @ 1.4A typical.
+12V ±5% @ 0.3A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >300,000 hours.

EMC Certification FCC Class B.

RADEON 32MB SDR Video Mode Table						
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits per pixel)		
				8	16	32
640x480	60	31.5	25.2	•	•	•
640x480	72	37.9	31.5	•	•	•
640x480	75	37.5	31.5	•	•	•
640x480	85	43.3	36.0	•	•	•
640x480	90	45.4	37.8	•	•	•
640x480	100	50.9	43.1	•	•	•
640x480	120	61.8	52.4	•	•	•
640x480	160	84.3	72.8	•	•	•
640x480	200	108.0	95.0	•	•	•
800x600	60	37.9	39.9	•	•	•
800x600	70	43.7	45.5	•	•	•
800x600	72	48.1	50.0	•	•	•
800x600	75	46.9	49.5	•	•	•
800x600	85	53.7	56.3	•	•	•
800x600	90	56.8	60.0	•	•	•
800x600	100	63.6	68.1	•	•	•
800x600	120	77.0	83.2	•	•	•
800x600	160	105.4	116.4	•	•	•
800x600	200	135.0	149.0	•	•	•
1024x768	70	56.5	75.0	•	•	•
1024x768	72	56.6	78.4	•	•	•
1024x768	75	60.0	78.8	•	•	•
1024x768	85	68.7	94.5	•	•	•
1024x768	90	72.8	100.1	•	•	•
1024x768	100	81.4	113.3	•	•	•
1024x768	120	98.7	139.0	•	•	•
1024x768	140	116.6	164.2	•	•	•



RADEON 32MB SDR Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits per pixel)			
				8	16	32	
1024x768	150	125.7	176.9	•	•	•	
1024X768	160	134.8	192.0	•	•	•	
1024x768	180	153.5	218.6	•	•	•	
1024X768	200	172.8	246.1	•	•	•	
1152x864	60	53.7	81.6	•	•	•	
1152x864	70	63.0	96.7	•	•	•	
1152x864	75	67.5	108.0	•	•	•	
1152x864	80	72.4	112.3	•	•	•	
1152x864	85	77.0	119.6	•	•	•	
1152x864	100	91.5	143.4	•	•	•	
1152x864	120	111.1	176.0	•	•	•	
1152x864	150	141.4	226.3	•	•	•	
1280x1024	60	64.0	108.0	•	•	•	
1280x1024	70	74.6	128.9	•	•	•	
1280x1024	74	79.0	138.5	•	•	•	
1280x1024	75	80.0	135.0	•	•	•	
1280x1024	85	91.1	157.5	•	•	•	
1280x1024	90	97.0	169.2	•	•	•	
1280x1024	100	108.5	190.9	•	•	•	
1280X1024	120	131.6	233.7	•	•	•	
1280X1024	125	137.6	244.4	•	•	•	
1280X1024	130	143.5	254.9	•	•	•	
1600x1200	52	64.2	137.7	•	•	•	
1600x1200	58	71.9	155.4	•	•	•	
1600x1200	60	75.0	162.0	•	•	•	
1600x1200	66	82.2	178.9	•	•	•	
1600x1200	72	90.0	195.9	•	•	•	
1600x1200	75	93.8	202.5	•	•	•	
1600x1200	76	95.2	208.7	•	•	•	
1600x1200	85	106.3	229.5	•	•	•	
1600x1200	90	113.8	251.2	•	•	•	
1920x1440	60	90.0	234.0	•	•	•	
1920x1440	75	112.5	297.0	•	•	•	
2048x1536	75	120.2	340.4	•	•	•	
Some display modes and color depths may not be available for all drivers. 2D & 3D resolutions & color depths are subject to change.							



RADEON 32MB SDR DVI (Flat Panel Display) Modes	
Display Screen Resolution	Refresh Rate (Hz)
640x480	85
800x600	85
1024x768	85
1280x1024	75
DVI (Flat Panel) display cannot be used concurrently with TV-output display.	
DVI "hotplugging" is not supported.	



ALL-IN-WONDER® RADEON™

Technical Information

System Requirements

Pentium® 4/III/II, Celeron™, AMD® K6/Athlon or compatible system with AGP 2X or AGP 2X/4X universal slot.

AGP 2.0 compliant.

Sound card supported by Windows® with available line input.

Interactive Program Guide requires Internet connection.

CD-ROM drive required for software installation.

DVD drive required for DVD playback (Windows® NT 4.0 not supported).

Operating System Windows® 2000 Windows® 98 SE Windows® Me

Minimum System Requirements for TV-ON-DEMAND™

Pentium® III 300MHz

32MB system memory

Full-duplex sound card

TV-Tuner Requirements

TV Signal from amplified antenna or cable. Versions available for:

NTSC (North America, Japan and Latin America)

Universal PAL/Secam (Europe and International PAL/Secam countries). Features may vary from country to country and depend on the country's television standard(s).



Specifications

Memory Configuration 32MB Double Data Rate non-upgradable.

Sync Signals Separate horizontal and vertical sync at TTL levels.

Video BIOS Compatible with VESA for Super VGA.

Monitor Support CRT monitor, 15-pin D shell (female), IBM standard VGA connector. Optional 28-pin DVI connector (female).

Display Support DDC1/2b/2b+ monitor support; VESA Display Power Management support. Register compatible with VGA.

TV/Video-out Connectors Composite and S-Video.

Video-in Connectors Composite and S-Video.

Video Capture ATI Rage Theatre™ chip. Full motion video capture (MPEG-1 and MPEG-2) and still image capture.

Audio Input Connector stereo pass-through.

Audio Output Connector external stereo connection to sound card's line input. Dolby® Digital 5.1 stereo (S/PDIF)

Full OpenGL® and Microsoft® DirectX® support.

WDM DirectShow® compliant.

MPEG Video Capture System Requirements

<u>Systems</u>	<u>720x480</u>	<u>352x240</u>
Pentium® III	best	best
Pentium® II	good	best
Pentium® 200MMX		good

Best = IPB Compression (smallest files)

Good = I-frame compression

Pentium® III recommended for full resolution MPEG-2 capture. Video capture capabilities are scalable to provide the best video capture possible with the CPU, memory and hard drive in the system.

Power +5V ±5% @ 0.4A typical.
+3.3V ±5% @ 1.4A typical.
+12V ±5% @ 0.3A typical.



Ambient Temperature

Operating 50° to 122° F (10° to 50° C).

Storage 32° to 162° F (0° to 70° C).

Relative Humidity

Operating 5% to 90% non-condensing.

Storage 0% to 95%.

MTBF >300,000 hours.

EMC Certification FCC Class B.

ALL-IN-WONDER RADEON 32MB DDR Video Mode Table						
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits per pixel)		
				8	16	32
640x480	60	31.5	25.2	•	•	•
640x480	72	37.9	31.5	•	•	•
640x480	75	37.5	31.5	•	•	•
640x480	85	43.3	36.0	•	•	•
640x480	90	45.4	37.8	•	•	•
640x480	100	50.9	43.1	•	•	•
640x480	120	61.8	52.4	•	•	•
640x480	160	84.3	72.8	•	•	•
640x480	200	108.0	95.0	•	•	•
800x600	60	37.9	39.9	•	•	•
800x600	70	43.7	45.5	•	•	•
800x600	72	48.1	50.0	•	•	•
800x600	75	46.9	49.5	•	•	•
800x600	85	53.7	56.3	•	•	•
800x600	90	56.8	60.0	•	•	•
800x600	100	63.6	68.1	•	•	•
800x600	120	77.0	83.2	•	•	•
800x600	160	105.4	116.4	•	•	•
800x600	200	135.0	149.0	•	•	•
1024x768	70	56.5	75.0	•	•	•
1024x768	72	56.6	78.4	•	•	•
1024x768	75	60.0	78.8	•	•	•
1024x768	85	68.7	94.5	•	•	•
1024x768	90	72.8	100.1	•	•	•
1024x768	100	81.4	113.3	•	•	•
1024x768	120	98.7	139.0	•	•	•
1024x768	140	116.6	164.2	•	•	•



ALL-IN-WONDER RADEON 32MB DDR Video Mode Table							
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits per pixel)			
				8	16	32	
1024x768	150	125.7	176.9	•	•	•	
1024X768	160	134.8	192.0	•	•	•	
1024x768	180	153.5	218.6	•	•	•	
1024X768	200	172.8	246.1	•	•	•	
1152x864	60	53.7	81.6	•	•	•	
1152x864	70	63.0	96.7	•	•	•	
1152x864	75	67.5	108.0	•	•	•	
1152x864	80	72.4	112.3	•	•	•	
1152x864	85	77.0	119.6	•	•	•	
1152x864	100	91.5	143.4	•	•	•	
1152x864	120	111.1	176.0	•	•	•	
1152x864	150	141.4	226.3	•	•	•	
1280x1024	60	64.0	108.0	•	•	•	
1280x1024	70	74.6	128.9	•	•	•	
1280x1024	74	79.0	138.5	•	•	•	
1280x1024	75	80.0	135.0	•	•	•	
1280x1024	85	91.1	157.5	•	•	•	
1280x1024	90	97.0	169.2	•	•	•	
1280x1024	100	108.5	190.9	•	•	•	
1280X1024	120	131.6	233.7	•	•	•	
1280X1024	125	137.6	244.4	•	•	•	
1280X1024	130	143.5	254.9	•	•	•	
1600x1200	52	64.2	137.7	•	•	•	
1600x1200	58	71.9	155.4	•	•	•	
1600x1200	60	75.0	162.0	•	•	•	
1600x1200	66	82.2	178.9	•	•	•	
1600x1200	72	90.0	195.9	•	•	•	
1600x1200	75	93.8	202.5	•	•	•	
1600x1200	76	95.2	208.7	•	•	•	
1600x1200	85	106.3	229.5	•	•	•	
1600x1200	90	113.8	251.2	•	•	•	
1920x1440	60	90.0	234.0	•	•	•	
1920x1440	75	112.5	297.0	•	•	•	
2048x1536	75	120.2	340.4	•	•	•	
Some display modes and color depths may not be available for all drivers. 2D & 3D resolutions & color depths are subject to change.							



ALL-IN-WONDER RADEON DVI (Flat Panel Display) Modes	
Display Screen Resolution	Refresh Rate (Hz)
640x480	85
800x600	85
1024x768	85
1280x1024	75
DVI (Flat Panel) display cannot be used concurrently with TV-output display.	
DVI "hotplugging" is not supported.	



Compliance Information

FCC Compliance Information

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

This device may not cause harmful interference, and

This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

The use of shielded cables for connection of the monitor to the graphics card is required to ensure compliance with FCC regulations.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.



Industry Canada Compliance Statement

ICES-003 This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe B Respecte toutes les exigences du Règlement sur le matériel brouiller du Canada.

CE Compliance Information

EMC Directive 89/336/EEC and Amendment 92/31/EEC, Class B Digital Device

EN 50081-1, Generic Emissions Standard for Residential, Commercial and Light Industrial Products

(EN 55022/CISPR 22, Limits and Methods of Measurement of Radio Interference Characteristics Information Technology Equipment)

Warning: This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

EN 50082-1, Generic Immunity Standard for Residential, Commercial and Light Industrial Products

(IEC 801-2, IEC 801-3, IEC 801-4)

Directive EMC 89/336/CEE et amendement 92/31/CEE, dispositif numérique de Classe B

EN 50081-1, Norme sur les émissions génériques pour les produits domestiques, commerciaux et industriels légers

(EN 55022/CISPR 22, Limites et méthodes de mesure des caractéristiques d'interférences radiophoniques, Matériel des technologies de l'information) *Mise en garde: ceci est un produit de Classe B. Il risque produire des interférences radiophoniques dans un environnement domestique auquel cas l'utilisateur peut se voir demandé de prendre des mesures adéquates.*

EN 50082-1, Norme sur l'immunité générique pour produits domestiques, commerciaux et industriels légers.

(CEI 801-2, CEI 801-3, CEI 801-4)

EMC Richtlinie 89/336/EEC und Änderung 92/31/EEC, Digitales Gerät der Klasse B

EN 50081-1, Allgemeiner Emissions-Standard für Haushalt- und kommerzielle Produkte sowie Erzeugnisse der Leichtindustrie



(EN 55022/CISPR 22, Beschränkungen und Verfahren der Messung von informationstechnischen Ausrüstungen mit Funkstörmerkmalen)

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EN 50082-1. Allgemeiner Unempfindlichkeits-Standard für Haushalt- und kommerzielle Produkte sowie Erzeugnisse der Leichtindustrie (IEC 801-2, IEC 801-3, IEC 801-4)

Product Notices

Macrovision Corporation

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RADEON™

RADEON™ VE

Using Video In/ Video Out

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Printed in Canada



Using Video In

Capture full motion or still image video

Your new RADEON™/RADEON™ VE graphics card has Video In (also known as Composite In) capability for capturing full motion or still image video. Just attach a video device such as a VCR, camcorder, or laser disk player to the *Video In* connector on the back of your new graphics card.

Connecting a Video Device

To connect your RADEON™/RADEON™ VE to a video device such as a VCR, camcorder, or DVD player, attach a composite cable from the *Composite Output* connector on your VCR, camcorder, or DVD player to the *Video In* on your graphics card. Most video devices such as VCRs, camcorders, and DVD players have a *Composite Output*, also referred to as an RCA output.

Connecting your video device to the RADEON™ / RADEON™ VE Video In

- 1 Turn off your computer and your VCR, camcorder, or DVD player.
- 2 Ensure your RADEON™/RADEON™ VE card is installed correctly.
- 3 Locate the *Composite Output* on your VCR, camcorder, or laser disk player.
- 4 Looking at the back of your computer, locate your RADEON™/RADEON™ VE card. Using a Composite cable, attach one end of the cable to the *Video In* on your graphics card and the other to the *Composite Output* on your video device.
- 5 Turn on your computer and your video device.
- 6 Use the ATI Multimedia Center to capture streaming video or still images.

For further information on video capture, and various capture formats, refer to the ATI Multimedia Center User's Guide located in the Online User's Manual (online.pdf) on the ATI Installation CD.



Using Video Out

View your PC's display on a TV!

Your new RADEON™/RADEON™ VE card has Video Out (also known as TV Out) capability. Just attach your card to a television, a monitor, or both. You can even attach your graphics card to your VCR and record your computer's display.

Television display is ideal for playing games, giving presentations, watching movies, and browsing the Internet. The following tips will help you get the most out of your Video Out feature.



READ ME FIRST

IMPORTANT INFORMATION for European Customers

- Some PC monitors in Europe **cannot** be used simultaneously with television display. When you enable television display in Europe, the refresh rate for the monitor and television is set to 50Hz. Some monitors may not support this refresh rate and could be damaged.

Please check the documentation supplied with your monitor to see if your monitor supports a refresh rate of 50Hz. **If your monitor does not support 50 Hz (or you are not sure), then turn off your monitor before turning on your computer when using your television as a display.**

For information about how to disable television display, see [Enabling and Disabling the Television Display on page 5](#).

- Some televisions in Europe may use a SCART connection. If you use SCART, read [Using SCART Connectors for European Televisions on page 5](#) before attempting to connect your RADEON™ to your television.

Connecting your RADEON™ / RADEON™ VE to a TV or a VCR

To connect your computer to a television or a VCR, attach a connector cable from the television (or VCR) to your RADEON™/RADEON™ VE. Most televisions (and VCRs) have a Composite video input, (also referred to as an RCA input). A growing number of televisions (and VCRs) have another type of video input called S-Video or S-VHS. An S-Video connection produces a higher quality display than Composite video. If your television has cable input only, which is the case on older units, you can connect your graphics card to your television through your VCR or an RF modulator (available in most electronics stores).

Connecting Your RADEON™ / RADEON™ VE Video Out to a Television or VCR

- 1 Turn off your computer and your television (or VCR).
- 2 Ensure your graphics card is installed correctly.
To use television display, you need the enhanced ATI driver (version 6.0 or greater) installed on your system. For information about placing the card in your computer and installing the enhanced ATI driver, see the Radeon™/Radeon™ VE Getting Started guide.
- 3 Determine if your television (or VCR) has an S-Video or Composite video connection.
- 4 Looking at the back of your computer, locate your RADEON™/RADEON™ VE card. Using an S-Video or Composite cable, attach one end of the cable to your graphics card and the other to your television (or VCR). (See [Figure 1. Connecting your RADEON™/RADEON™ VE card to a TV \(or VCR\) below.](#))
- 5 Turn on your computer and your television (or VCR).
- 6 To turn your television display on and off, please see [Enabling and Disabling the Television Display on page 5.](#)

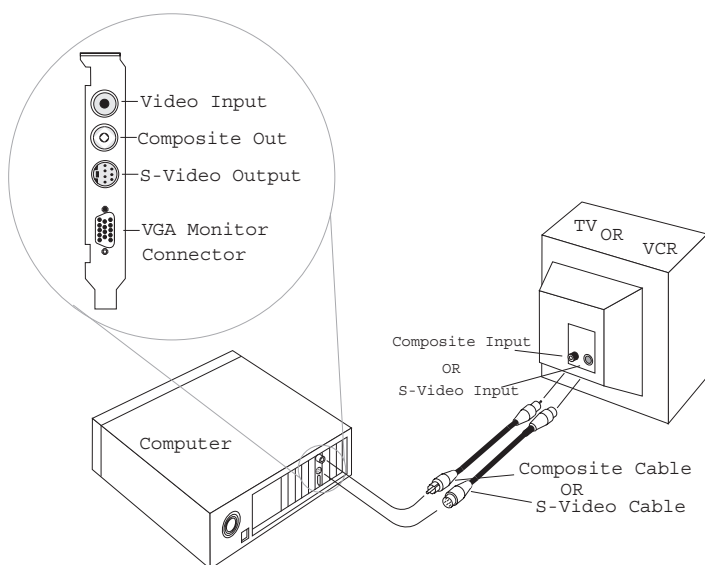


Figure 1. Connecting your RADEON™/RADEON™ VE card to a TV (or VCR)

Using SCART Connectors for European Televisions

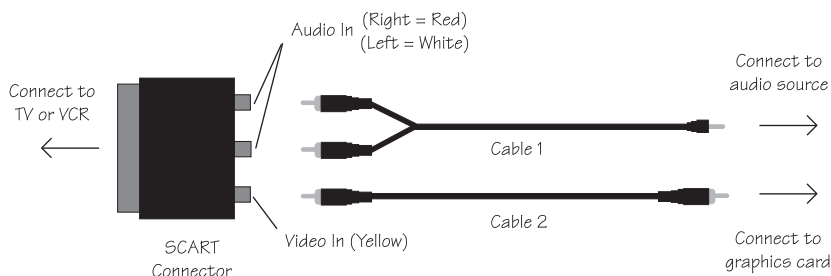


Figure 2. Using a SCART connector with a Composite cable

The SCART connector supports only the Composite video format, which is the most common type. Figure 2 shows how to connect your RADEON™/RADEON™ VE to a European TV using the SCART.

If your European television supports S-Video (also called S-VHS) input, you can use an S-Video cable (available in most consumer electronic stores) to view your PC on a television.

Using and Adjusting Video Out

Enabling and Disabling the Television Display

- 1 Click **Start**.
- 2 Point to **Settings**, then click **Control Panel**.
- 3 Double-click **Display**.
- 4 Click on the **Settings** tab and then the **Advanced...** button.
- 5 Click on the **ATI Displays** tab.
- 6 Click on the **enable/disable** button next to the word “TV” to enable/disable television display.

If there is no display on your TV, you may need to switch it to video display mode. For more information, consult the documentation supplied with your TV. If your television is connected to your VCR, you may need to tune the TV to the VCR's output. For information about connecting your TV to your VCR, consult the documentation that came with your VCR.

- 7 Click **Apply** to save the changes you have made.

*For information about how to use television display and the ATI Displays Properties page, click the **Help** button.*

Starting Windows® with Television Display Enabled

The television screen may become scrambled temporarily during the initial Windows® logo display. This is only a temporary effect and your television screen will be restored within a few seconds.

During start up, your RADEON™/RADEON™ VE will go through a sequence of mode settings during which your television display will remain blank. This process takes only a few seconds and helps program the television display.

Using a Monitor vs. Using the Television Display

Using your television for your computer's display is ideal for playing games, giving presentations, watching movies, and browsing the Internet. However, the display on your monitor may change or look squashed. This occurs because the display adjusts to fit the dimensions of your television. To correct the monitor's display, use the monitor's control buttons to adjust its display size and position.

Some single frequency monitors may not work with television display enabled. If you experience problems when television display is enabled, disable television display to restore your monitor's display.

Adjusting Monitor Display

The size of the display on your monitor may be smaller and not perfectly centered when you have television display enabled. These effects are caused by the changes required to provide a proper display on the television.

Use the controls available on the **Adjustments** tab on the **Monitor Properties** page (accessible by clicking on the **Monitor** button on the **ATI Displays** tab) to adjust the display on your monitor only. Click on the **Television** button to adjust the television display only.

Viewing Text on Television

Due to the different technology used in the manufacturing of televisions and PC monitors, standard PC text may look too small on your television. You can compensate for this by using larger fonts.

To Use Larger Display Fonts

- 1 Click **Start**.
- 2 Point to **Settings**, then click **Control Panel**.
- 3 Double-click **Display**.
- 4 Click on the **Settings** tab and then the **Advanced...** button.
- 5 Make sure you're on the **General** tab.
- 6 In the **Font Size** box, select the size you want your displayed fonts to be.
- 7 Click **Apply**, then follow the onscreen instructions to save your new settings.

Reducing Edge Distortion

When using a television for your PC's display, you may see some edge distortion on the left and right side of your television screen. This effect depends on your television and the PC application you are running.

To reduce edge distortion, you can increase the TV display's horizontal size.

To Increase the Horizontal Size

- 1 Click **Start**.
- 2 Point to **Settings**, then click **Control Panel**.
- 3 Double-click **Display**.
- 4 Click on the **Settings** tab and then the **Advanced...** button.
- 5 Click on the **ATI Displays** tab.
- 6 Click on the **TV** button.
- 7 Make sure you're on the **Adjustments** tab.
- 8 Click on the plus (+) button under Horizontal Screen to increase the horizontal size of the television display.
- 9 Click **Apply** to save the changes you have made.

You can also reduce edge distortion by reducing the TV's brightness.

To Change the Brightness

- 1 Click **Start**.
- 2 Point to **Settings**, then click **Control Panel**.
- 3 Double-click **Display**.
- 4 Click on the **Settings** tab and then the **Advanced...** button.
- 5 Click on the **ATI Displays** tab.
- 6 Click on the **TV** button.
- 7 Drag the **Brightness slider** to the left to decrease the brightness.
- 8 Click **Apply** to save the changes you have made.

Changing Display Configurations

If you move your computer to a place where you are using television display only, make sure that you have the television display feature enabled; see [Enabling and Disabling the Television Display on page 5](#).

If you change your display mode to a higher resolution, TV display is disabled beyond the 800x600 mode. If a television is your only display device and a higher mode is selected, the display on your television will disappear. Try pressing ESC or wait for 15 seconds to see if your display will return. If your display does not return, you will need to connect a monitor to your computer to re-enable television display.

Using Games and Applications

Some older games and applications may program your RADEON™/RADEON™ VE card directly to run under a specific display mode. This may cause your television display to turn off automatically or become scrambled (the PC monitor will not be affected). Your television display will be restored once you exit the game or if you restart your computer.